

# School of Pharmacy

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## Degrees Offered

- Doctor of Pharmacy (Pharm.D.)
- Doctor of Philosophy (Ph.D.)

## Introduction

The mission of the West Virginia University (WVU) School of Pharmacy is to improve the health and well-being of West Virginians and society at large through pharmacy education, research, practice, and service.

Pharmacy was first offered at West Virginia University as a department in the School of Medicine in 1914. The College of Pharmacy emerged as a separate entity in 1936 and became the School of Pharmacy in 1958. In 1960, the School of Pharmacy changed from a four-year to a five-year program and in 1998 to a six-year program. The doctor of pharmacy (Pharm.D.) program comprises four years of professional study preceded by a minimum of two years of pre-pharmacy study in an accredited U.S. or Canadian college of arts and sciences.

Many pharmacy graduates enter practice in community or institutional pharmacies; postgraduate pharmacy residency programs offer the opportunity for additional training and experience in general pharmacy practice and in several areas of specialty practice. Positions are also available in various government agencies, the pharmaceutical industry, long-term care, nuclear pharmacy, home health-care organizations and many other areas. Pharmacists are eligible for commissions in the armed forces and the U.S. Public Health Service. Pharmacists also may prepare for careers in teaching and research.

The WVU School of Pharmacy also offers Ph.D. programs in health services and outcomes research and the pharmaceutical and pharmacological sciences.

## Accreditation

The School of Pharmacy is fully accredited by the Accreditation Council for Pharmacy Education, the national agency for the accreditation of professional degree programs in pharmacy. The Council is composed of members from the American Pharmacists Association, the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy, and the American Council on Education.

The School of Pharmacy holds membership in the American Association of Colleges of Pharmacy, whose mission is to lead and partner with member institutions in advancing pharmacy education, research, scholarship, practice, and service to improve societal health.

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## ADMINISTRATION

### DEAN

- William P. Petros - Pharm.D. (Philadelphia College of Pharmacy and Science)

### ASSOCIATE DEAN FOR ACADEMIC AFFAIRS AND EDUCATIONAL INNOVATION

- Mary K. Stamatakis - Pharm.D. (The Ohio State University)  
Professor, Department of Clinical Pharmacy

### ASSOCIATE DEAN FOR STUDENT SERVICES

- Mary L. Euler - Pharm.D. (University of Missouri-Kansas City School of Pharmacy)  
Professor, Department of Clinical Pharmacy

### ASSOCIATE DEAN FOR RESEARCH AND GRADUATE PROGRAMS (INTERIM)

- Paul R. Lockman - Ph.D. (Texas Tech University Health Sciences Center)  
Chair, Department of Pharmaceutical Sciences

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## FACULTY

### PROFESSORS

- Marie A. Abate - Pharm.D. (University of Michigan)  
Department of Clinical Pharmacy, Director, West Virginia Center for Drug and Health Information
- Patrick S. Callery - Ph.D. (University of California)  
Department of Pharmaceutical Sciences
- Vincent Castranova - Ph.D. (West Virginia University)  
Department of Pharmaceutical Sciences
- David P. Elliott - Pharm.D. (University of Texas)

Department of Clinical Pharmacy, Associate Chair for the Charleston Division

- Lori A. Hazlehurst - Ph.D. (University of Vermont)  
Department of Pharmaceutical Sciences
- Gerald M. Higa - Pharm.D. (University of the Pacific)  
Department of Clinical Pharmacy and Hematology/Oncology
- Jason D. Huber - Ph.D. (Florida A&M)  
Department of Pharmaceutical Sciences
- S. Suresh Madhavan - Ph.D. (Purdue University)  
Chair, Department of Pharmaceutical Systems and Policy
- William P. Petros - Pharm.D. (Philadelphia College of Pharmacy & Science)  
Department of Pharmaceutical Sciences
- Charles D. Ponte - Pharm.D. (University of Utah)  
Departments of Clinical Pharmacy and Family Medicine
- Yongyut Rojanasakul - Ph.D. (University of Wisconsin)  
Department of Pharmaceutical Sciences
- Usha Sambamoorthi - Ph.D. (University of Madras)  
Department of Pharmaceutical Systems and Policy
- Elizabeth J. Scharman - Pharm.D. (Virginia Commonwealth University/Medical College of Virginia)  
Department of Clinical Pharmacy, Charleston Division. Director, West Virginia Poison Center
- Terrence L. Schwinghammer - Pharm.D. (Purdue University)  
Chair, Department of Clinical Pharmacy
- Ginger Scott - Ph.D. (University of Minnesota)  
Department of Pharmaceutical Systems and Policy
- Douglas Slain - Pharm.D. (Duquesne University)  
Department of Clinical Pharmacy
- Mary K. Stamatakis - Pharm.D. (The Ohio State University)

## ASSOCIATE PROFESSORS

- Robert K. Griffith - Ph.D. (The Ohio State University)  
Department of Pharmaceutical Sciences
- Werner J. Geldenhuys - Ph.D. (North-West University, South Africa)  
Department of Pharmaceutical Sciences, Associate Chair
- Allie Karshenas - Ph.D. (University of Southern Mississippi)  
Department of Pharmaceutical Systems and Policy
- Kimberly M. Kelly - Ph.D. (Rutgers University)  
Department of Pharmaceutical Systems and Policy
- Grazyna Szklarz - Ph.D. (Clarkson University)  
Department of Pharmaceutical Sciences
- Erin Winstanley - Ph.D. (The John Hopkins Bloomberg School of Public Health)  
Department of Pharmaceutical Systems and Policy

## CLINICAL ASSOCIATE PROFESSORS

- Gina M. Baugh - Pharm.D. (University of Pittsburgh)  
Department of Clinical Pharmacy. Director, Introductory Pharmacy Practice Experiences
- Matthew Blommel - Pharm.D. (Mercer University)  
Department of Clinical Pharmacy
- Krista D. Capehart - Pharm.D. (University of Michigan)  
Department of Clinical Pharmacy. Director, Wigner Institute for Advanced Pharmacy Practice
- Betsy M. Elswick - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy
- Lena M. Maynor - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy. Director, Advanced Pharmacy Practice Experiences
- Christopher M. Terpening - Ph.D. (University of Colorado)  
Department of Clinical Pharmacy
- Tara R. Whetsel - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy
- Jon P. Wietholter - Pharm.D. (University of Pittsburgh)

Department of Clinical Pharmacy

## CLINICAL ASSISTANT PROFESSORS

- Ashleigh L. Barrickman - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy, Director of Skills Development
- Jennifer Confer - Pharm.D. (University of Arizona)  
Department of Clinical Pharmacy
- Gretchen M. Garofoli - Pharm.D. (University of Pittsburgh)  
Department of Clinical Pharmacy
- Franklin Huggins - Pharm.D. (University of Utah)  
Department of Clinical Pharmacy
- John (Jay) Martello - Pharm.D. (Duquesne University)  
Department of Clinical Pharmacy
- Ashlee McMillan - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy
- Jeremy J. Prunty - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy
- Travis G. White - Pharm.D. (West Virginia University)  
Department of Clinical Pharmacy, Director, Health Education Center

## ASSISTANT PROFESSORS

- Erik A. Bey - Ph.D. (Cleveland State University)  
Department of Pharmaceutical Sciences
- Wei Du - Ph.D. (Tohoku University School of Medicine, Japan)  
Department of Pharmaceutical Sciences
- Nilanjana Dwibedi - Ph.D. (University of Houston)  
Department of Pharmaceutical Systems and Policy
- Traci J. LeMasters - Ph.D. (West Virginia University)  
Department of Pharmaceutical Systems and Policy
- Mohammed A. Nayeem - Ph.D. (Osmania University, India)  
Department of Pharmaceutical Sciences
- Xi Tan - Ph.D. (University of Michigan)  
Department of Pharmaceutical Systems and Policy

## TEACHING ASSISTANT PROFESSOR

- Marina Galvez Peralta - Ph.D. (University of Seville, Spain)  
Department of Pharmaceutical Sciences

## Degree Designation Learning Goals

### DOCTOR OF PHARMACY (PHARMD)

Upon successful completion of the West Virginia University Doctor of Pharmacy degree program, the graduate will be able to accomplish the following educational outcomes (EOs):

**EO 1 Foundational Knowledge and Skills (Learner)** - Develop, integrate, and apply foundational knowledge (e.g., concepts, facts, principles) from biological, pharmaceutical, social, behavioral, administrative, and clinical sciences to evaluate the scientific literature, explain drug actions, solve therapeutic problems, and advance individual and population health.

- Acquire and demonstrate depth and breadth of knowledge of foundational scientific, clinical, socioeconomic, and humanistic concepts and skills.
- Explain how knowledge in the foundational sciences is integral to pharmacy practice.
- Integrate knowledge from foundational sciences to explain how specific drugs or drug classes work and evaluate their potential value in individuals and populations.
- Apply foundational concepts and skills to practice.
- Use scientific reasoning and critical thinking skills in practice to address problems, issues, or concerns.
- Develop and apply creative and innovative approaches to effectively resolve problems and improve patient outcomes.
- Apply an evidence-based approach to practice by identifying appropriate questions to address, using databases and other resources to retrieve information, critically analyzing and interpreting relevant scientific information and other evidence, formulating sound conclusions, and integrating the best published evidence with expertise and individual patient values/needs.

- Analyze and use epidemiologic, pharmaco-economic, medication utilization, and quality improvement data when developing evidence-based programs and protocols.
- Apply knowledge of research methodology to design or conduct basic research, practice-based studies, or clinical trials.
- Use information technology where appropriate to enhance individual knowledge and skills.

**EO 2 Communication Skills (Communicator, Educator)** – Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization.

- Use appropriate verbal and nonverbal communication skills with individuals or groups, including patients, health professionals and others.
- Use effective written communication skills with patients, health professionals, and others, including the development of documents pertinent to professional or organizational needs (e.g., monographs, reports).
- Educate target audiences by using the most effective method to deliver information, in coordination with other health care professionals as appropriate.
- Use technology to facilitate or enhance professional communications and presentations.

**EO 3 Professionalism, Advocacy, and Leadership (Professional, Leader, Advocate)** - Exhibit behaviors and values consistent with the professional trust given by patients, healthcare providers, and society; assure that patients' best interests are represented; and demonstrate responsibility for achieving shared goals regardless of position.

- Conduct pharmacy practice duties and patient care responsibilities in accordance with applicable federal, state, and local laws, statutes, and regulations, as well as professional guidelines and standards.
- Serve as an advocate, leader, and change agent for pharmacy and pharmacists' professional roles and responsibilities by implementing or participating in new, evidence-based models for cost-effective pharmacist-delivered patient care.
- Serve as an advocate for community and patient health and medication therapy needs, including disadvantaged or underserved patients and those from diverse cultural and socioeconomic backgrounds, while honoring their autonomy and dignity.
- Serve as a positive role model in actions/communications for peers and other health care providers by maintaining a high standard for personal and professional demeanor and ethical conduct.
- Respect all points of view in professional interactions while placing patients' needs and desires at the forefront.
- Demonstrate compassion, empathy, honesty, integrity, ethical behavior and altruism in all actions and communications with patients, families, and care providers.
- Develop professional competence through ongoing, active and self-directed pursuit of new knowledge and skills.
- Identify and analyze emerging health care and pharmacy issues and incorporate new roles, products and services into practice that can improve patient outcomes.
- Accept accountability and responsibility for one's words and actions.

**EO 4 Self-Awareness (Insightful)** – Examine and assess personal knowledge, skills, abilities, attitudes, beliefs, motivation, and emotions and strive for continual improvement.

- Conduct self-assessments on a regular basis and create, implement, evaluate, and modify as needed plans for personal improvement and continuing professional development.
- Recognize personal strengths and limitations and seek assistance when needed.
- Approach tasks and situations with flexibility and a desire to learn.
- Accept constructive criticism and display a willingness to correct and learn from errors.

**EO 5 Interprofessional Collaboration (Collaborator)** – Actively participate as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.

- Collaborate with health care professionals, patients, and/or caregivers to ensure that desired patient-specific or population-based health outcomes are achieved.
- Facilitate team building among health care professionals by developing and maintaining an atmosphere of mutual respect and shared values that place the patient at the forefront.
- Effectively utilize the knowledge, expertise, and unique roles of health care team providers and refer patients to others when indicated.
- Serve as the medication expert on a collaborative care team by managing the pharmacotherapy for patients' medical conditions and by proactively providing drug product and other medication related information to team members.
- Accept responsibility for medication-related outcomes on the care team.

**EO 6 Patient Care (Provider)** – Provide patient-centered care as the medication expert.

- Accurately interpret, prepare and/or compound, handle and dispense prescriptions for patients.

- Obtain necessary patient-specific data (e.g., consulting patient records, taking medication histories, performing basic physical assessments, ordering/interpreting lab tests), and evaluate and use these data when performing patient care related responsibilities.
- Evaluate pharmaceutical products, including information about the drug, dosage form, delivery system and cost/benefit, when conducting a medication review or preparing a care plan.
- Conduct comprehensive medication reviews and prepare individualized care plans to optimize patient outcomes, with emphasis on commonly encountered chronic or high risk conditions amenable to pharmacotherapy and patients at greater risk for adverse events.
- Work with patients, caregivers, and health care professionals to implement specific therapy plans.
- Educate and empower patients to take an active role in their health and incorporate recommendations for healthy living and self-care into care plans.
- Monitor and evaluate patients during therapy for drug product or pharmacotherapy problems, patient concerns, or adherence issues and recommend or implement solutions.
- Work with patients and other health care providers to ensure the continued success of individual care plans.
- Document patient-care services in charts/medical records and on forms needed for reimbursement.
- Counsel patients and/or caregivers about the following to help ensure a care plan's success: i) medications, non-drug therapy, dietary supplements and natural products; ii) insurance and other options for obtaining necessary medications; iii) proper use of testing devices and medical goods and equipment; and iv) healthy lifestyle changes.

**EO 7 Population-Based Care (Promoter, Provider)** – Design and implement prevention, intervention, and educational strategies for communities to manage chronic disease and improve health and wellness.

- Develop, recommend, and provide preventive health services, such as administration of vaccines and screening tests.
- Develop and implement disease management programs based upon identified needs and priorities (e.g., cost, access, and patient satisfaction considerations; commonly encountered, chronic conditions managed by pharmacotherapy).
- Evaluate and adjust interventions as needed to maximize population health.
- Promote public awareness of health promotion and disease prevention strategies.
- Design, develop, and disseminate public health related educational materials or services in a culturally competent manner.
- Work with health care professionals and other personnel to identify and help resolve key public health issues and problems, and participate in policies or strategies to address them.

**EO 8 Pharmacy and Medication Use Systems (Manager)** – Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use systems.

- Demonstrate knowledge of pharmacy management including operations, human and fiscal resources, marketing, and leadership principles.
- Design, use, and manage systems to prepare, dispense, distribute and administer medications to optimally serve patient's drug-related needs.
- Use knowledge of the organization and financing of the U.S. healthcare system to provide and effectively manage progressive pharmacy services.
- Develop a business plan for integrating clinical and distributive services that includes methods for supporting and obtaining reimbursement for clinical services provided to patients.
- Demonstrate and apply knowledge of national standards, guidelines, best practices, and established principles and processes for safe medication use to protect patient safety.
- Participate in quality improvement programs and employ performance indicators to enhance the quality of care and cost effectiveness of services provided and to optimize safe, appropriate medication use.
- Participate in developing and performing medication use evaluations to identify and resolve drug therapy problems or concerns.
- Reconcile a patient's medications when transitioning from one care setting to another by communicating effectively with all involved health care professionals.
- Use current and emerging information and system technologies to enhance safe and effective medication use.
- Provide recommendations for developing and managing a formulary that incorporate pharmaco-economic principles.
- Actively participate in, and contribute to the development of, strategies to minimize drug misuse/abuse.

## DOCTOR OF PHILOSOPHY (PHD)

The overall goals of the PhD program in Health Services and Outcomes Research are:

- To educate and train highly qualified individuals to pursue independent research in health services and outcomes research (HSOR) within interdisciplinary teams, and to function and contribute as a member of a research team.
- To prepare competent scientists able to contribute to health-related research, industrial research and development, pharmaceutical education, and scholarship.
- To advance research in pharmaceutical and healthcare delivery.
- To provide leadership for the pharmacy profession in research, graduate education, and health policy making.

The program is designed to prepare students to become independent researchers. Students will develop competencies in the scientific research process through didactic studies and conceptualizing, designing, conducting, and reporting original research.

#### **Didactic Studies**

- To learn basic principles and apply these principles to specific disciplines and related fields to cultivate a broad background of knowledge.
- To develop research skills, including scientific communication and critical thinking/problem solving abilities by participating in seminars and designated research skill courses.

#### **Research Training**

- To acquire practical experience in conducting original research, including acquisition of background information (e.g. literature research), problem development, experimental design and experimentation, collecting primary data and using secondary data, and data analyses.
- To foster research communication skills by writing abstracts for research presentations, manuscripts for publication, research grant proposals, and a thesis or dissertation.
- To gain additional insight into research and scholarship by participating in scholarly exchanges with faculty and students in the WVU School of Pharmacy, the Health Sciences Center (HSC), as well as the national and international healthcare community.

### **DOCTOR OF PHILOSOPHY (PHD)**

Student Learning Outcomes of the Pharmaceutical & Pharmacological Sciences graduate education program are focused on preparing students to become independent researchers. To be successful in our program, students will need to develop competencies in the scientific research process through didactic studies in an area of emphasis and then conceptualizing, designing, conducting, and reporting original research.

#### **Student Learning Outcomes**

- Learn basic and applied principles in specific disciplines and related fields in order to develop a broad background of knowledge.
- Develop research skills including scientific communication and critical thinking/problem solving ability by participating in seminars and designated research skill courses.
- Gain hands-on experience in conducting original research, including acquisition of background information (e.g. literature research), experimental design and experimentation.
- Develop research communication skills by writing abstracts for research presentations, manuscripts for publication, research grant proposals, and a thesis or dissertation.
- Gain additional insight into research and scholarship by participating in scholarly exchanges with faculty and students in the WVU School of Pharmacy, the Health Sciences Center (HSC), and the West Virginia University community.
- Be able to pursue independent research in specialized fields in interdisciplinary teams and to function and contribute as members of research teams
- Be competent scientists that are able to contribute to health-related research, industrial research and development, pharmaceutical education, and scholarship