

# Pharmaceutical Sciences

## Degrees Available at SIUE

- Master of Science

## Areas of Concentration

- Medicinal Chemistry
- Pharmacology
- Pharmaceuticals

## Program Format

The program can be completed through traditional daytime courses. Lab and research courses are offered on evenings/weekends.

## Pharmaceutical Sciences at SIUE

While pharmacists work to manage patient care with emphasis on therapies using existing drugs, pharmaceutical scientists are engaged in the discovery and development of new drugs. The Department of Pharmaceutical Sciences provides a multidisciplinary approach to not only determine the detailed biological mechanism of disease, but develop the molecular interventions that can provide the treatment or cure. Students in SIUE's School of Pharmacy are taught in state-of-the-art laboratories by an internationally recognized faculty with many years of both academic and pharmaceutical industry experience.

## Career Opportunities

This master's program prepares students for research positions in the pharmaceutical sciences (industrial, academic or government), or to pursue doctoral degrees in health sciences, medical and drug discovery research. In addition, students will be prepared for the sciences component of other non-research but science- and technology-related positions relevant to the pharmaceutical industry (e.g. evaluation of new technologies for business development units, scientific patent advising, administration, consulting).

Data from the Bureau of Labor Statistics, U.S. Department of Labor, indicates a continued growth rate for medical scientists of 8% between the years 2014-2024.

## Graduate Assistantships

Graduate assistantships for teaching, research and related administrative duties are available. Assistantships include a tuition waiver and monthly stipend. A graduate assistantship enhances your educational experience and helps to develop valuable professional skills.

## Faculty

Faculty members provide opportunities for students to study in three of the main areas of the discipline. Our medicinal chemistry faculty allows students to explore all aspects of drug design and discovery, including computational methods, structure-activity studies, synthetic methods development and natural products chemistry. Our pharmacology team allows students to engage in studying the cellular signaling pathways that are important in disease processes and the mechanism of action of drug candidates for treating the resulting diseases, including pharmacogenomic aspects of patient populations. Our pharmaceuticals faculty guides students in the study of mathematical, computational and experimental methods to study the pharmacokinetics (ADME) of drug molecules in vivo, as well as all aspects of drug delivery.

## Admission Requirements

1. Graduate School application and \$40 fee
2. Submission of all postsecondary academic transcripts
3. Completion of a baccalaureate degree in pharmacy, chemistry, or the biological sciences. Prior academic work should include a year each of biology or biochemistry and organic chemistry.
4. GPA: At least 3.00 (A=4.00) for the final 60 semester hours of baccalaureate study.
5. Graduate Record Examination (GRE) general is required. The GRE advanced subject (chemistry, biochemistry or biology) test is optional.
6. International Applicants: A minimum TOEFL Score of 550 (paper based); 213 (computer based), or 79 (internet based) is required or the IELTS minimum of 6.5.
7. Three Letters of Recommendation are Required
8. Personal Statement is Required

Program application materials may be uploaded during the application process, but official transcripts must be sent directly from the school attended, and test scores must be verifiable with the appropriate testing service. Please contact the Graduate Admissions office with questions regarding the application submission process at [graduateadmissions@siue.edu](mailto:graduateadmissions@siue.edu).



## Faculty

**Mike Crider, PhD**  
*Chair, Department of Pharmaceutical Sciences*

1975, University of Kentucky

**Joe Schober, PhD**  
*Graduate Program Director*

2003, University of Illinois at Chicago (UIC)

**Radhika Devraj, PhD**  
1999, Purdue University

**Gireesh Gupchup, PhD, FAPhA**  
1996, Purdue University

**Bill Kolling, PhD**  
1997, University of Iowa

**Maria Kontoyianni, PhD**  
University of North Carolina, Chapel Hill

**Guim Kwon, PhD**  
1992, University of Michigan

**Tim McPherson, PhD**  
1995, Purdue University

**Marcelo Nieto, PhD**  
1999, the National University of Córdoba (Argentina)

**Karin Sandoval, PhD**  
2004, University of Arizona

**Cathy Santanello, PhD**  
1989, St. Louis University

**Walter Siganga, PhD**  
1991, University of Maryland, Baltimore

**Ken Witt, PhD**  
2001, University of Arizona

**Ron Worthington, PhD**  
1982, Washington University

## Curriculum

Students will consult with their advisors to tailor a program to their own research interests within the pharmaceutical sciences. The following are examples of a typical two-year program for each track.

### Medicinal Chemistry Track

#### Fall Semester

PHPS 500 Cellular Targets For Drug Discovery	3
PHPS 420 Principles of Pharmacology	4
PHPS 510 Pharmaceutical Sciences Foundations and Research Methods	1
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
Total Credits	9

#### Spring Semester

PHPS 501 Principles of Rational Drug Discovery	3
PHPS 540 Pharmacokinetics	3
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	8

#### Year 1 (Summer Semester)

PHPS 598 Pharmaceutical Sciences Research	3
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PHPS Elective-1	2
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	4

PHPS Elective-2	3
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
PHPS 598 Pharmaceutical Sciences Research	3
Total Credits	7

#### Year 2 (Summer Semester)

PHPS 599 Pharmaceutical Sciences Thesis Preparation	3
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**Total Hours: 34**

### Pharmacology Track

#### Fall Semester

PHPS 420 Principles of Pharmacology	4
PHPS 500 Cellular Targets For Drug Discovery	3
PHPS 510 Pharmaceutical Sciences Foundations and Research Methods	1
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
Total Credits	9

#### Spring Semester

PHPS 501 Principles of Rational Drug Discovery	3
PHPS 540 Pharmacokinetics	3
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	8

#### Year 1 (Summer Semester)

PHPS 598 Pharmaceutical Sciences Research	3
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PHPS Elective-1	2
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	4

PHPS Elective-2	3
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
PHPS 598 Pharmaceutical Sciences Research	3
Total Credits	7

#### Year 2 (Summer Semester)

PHPS 599 Pharmaceutical Sciences Thesis Preparation	3
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**Total Hours: 34**

### Pharmaceutics Track

#### Fall Semester

PHPS 500 Cellular Targets For Drug Discovery	3
PHPS 541 Drug Delivery	3
PHPS 510 Pharmaceutical Sciences Foundations and Research Methods	1
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
Total Credits	8

#### Spring Semester

PHPS 501 Principles of Rational Drug Discovery	3
PHPS 540 Pharmacokinetics	3
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	8

#### Year 1 (Summer Semester)

PHPS 598 Pharmaceutical Sciences Research	3
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PHPS Elective-1	2
PHPS 598 Pharmaceutical Sciences Research	2
Total Credits	4

PHPS Elective-2	3
PHPS 595 Graduate Seminar in the Pharmaceutical Sciences	1
PHPS 598 Pharmaceutical Sciences Research	3
Total Credits	7

#### Year 2 (Summer Semester) \*if needed

PHPS 599 Pharmaceutical Sciences Thesis Preparation	3
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**Total Hours: 33**

## Graduation Requirements

Students will be required to complete at least 30 hours of acceptable graduate credit with a GPA of 3.0 or higher (A=4.0). At least 12 semester hours must be earned from core courses and two semester hours from graduate seminar. Students must take a minimum of four hours of electives.

At least 10 semester hours must be earned for research and students must be enrolled in a minimum of one hour of research per semester after choosing an advisor. Students must complete a thesis based upon the student's original research work.

Finally, students must assemble an advisory committee and meet with this committee for a public presentation and oral defense of the thesis.

## Contact Information

Graduate Program Director  
School of Pharmacy  
Phone: 618-650-5129  
Email: joschob@siue.edu