

# Pharmaceutical Sciences (PSCI)

## Courses

### **PSCI 300. Undergraduate Research Experience in Pharmaceutical Sciences. 1-3 hours.**

Course supports the academic environment for undergraduate students at UIC. The research experience will be under the guidance of a faculty member who will act as a research supervisor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Previously listed as BPS 300. Application of credit toward the degree is contingent upon the approval of the student's college and/or department. Prerequisite(s): Consent of the instructor supervising the research experience. Open only to sophomores, juniors, and seniors.

### **PSCI 380. Undergraduate Research in Pharmaceutical Sciences. 1-3 hours.**

Investigation, under the direction of one or more faculty members, of a problem of limited scope. Course Information: Previously listed as BPS 380. May be repeated to a maximum of 6 hours per department. A total of not more than 8 hours of PSCI 380 and PSCI 390 may be applied toward the 12 hours of professional electives. Students may register for more than one section per term. Prerequisite(s): Minimum cumulative grade point average of 3.50 and consent of the instructor, department head, and Associate Dean of Student Affairs.

### **PSCI 390. Special Projects in Pharmaceutical Sciences. 1 or 2 hour.**

Provide professional students in the Pharm.D. program with an opportunity to carry out a special project with defined objectives under the guidance of a faculty mentor. Course Information: Previously listed as BPS 390. May be repeated to a maximum of 4 hours. A total of not more than 8 hours of PSCI 380 and PSCI 390 may be applied toward the 12 hours of professional electives. Students may register for more than one section per term. Prerequisite(s): Consent of the instructor and consent of the department head, and Associate Dean for Student Affairs.

### **PSCI 421. Advanced Dosage Form Design. 1 hour.**

Students attend fourteen labs where they make sixteen new dosage formulations. Several labs will focus on using new devices and machines that may be seen in compounding practice. Includes veterinary formulations that may be seen in cats and dogs. Course Information: Previously listed as BPS 421. Prerequisite(s): PHAR 431 and PHAR 432.

### **PSCI 425. College of Pharmacy Colloquium Lecture Series. 1 hour.**

Weekly, one-hour, basic-research seminars given by invited lecturers. Course Information: Previously listed as BPS 425. May be repeated for a maximum of 2 hours. Students will not be able to concurrently enroll in PSCI 425 and PMPR 355 during the Spring semester.

### **PSCI 447. Career Paths in the Pharmaceutical Industry. 1 hour.**

### **PSCI 485. Concentration Research. 2 hours.**

Special independent study project of limited scope under the direction of one or more faculty members with specialization in that area. The project may require literature research related to the research project. Course Information: May be repeated to a maximum of 4 hours. Extensive computer use required. Prerequisite(s): Consent of the instructor and admission to the Doctorate in Pharmaceutical Sciences.

### **PSCI 499. Special Projects in Pharmaceutical Sciences. 1-3 hours.**

Special projects in Pharmaceutical Sciences. Course Information: Previously listed as PMPG 499.

### **PSCI 501. Drug Discovery, Design, and Development. 3 hours.**

Provides an overview of the process to discover, design, develop, and market drugs set in the background of chemistry and biology. Course Information: Credit is not given for PSCI 501 if the student has credit in BPS 507 or MDCH 507 or PMPG 507.

### **PSCI 502. Training in Research Presentation. 1 hour.**

Provides practice and practical guidance for giving a high quality research seminar. Course Information: Satisfactory/Unsatisfactory grading only. Previously listed as MDCH 593.

### **PSCI 503. Biostatistics for Pharmaceutical Scientists. 1 hour.**

Introduction to statistical reasoning and experimental design followed by a practical introduction to statistical tests. The course will rely extensively on a flipped classroom model where students learn the basic computational approaches. Course Information: Extensive computer use required. Meets eight weeks of the semester. Credit is not given for PSCI 503 if the students has credit in BSTT 400. Recommended background: Advanced college algebra (Pre-calculus).

### **PSCI 504. Science Writing and Storytelling. 1 hour.**

Designed to use storytelling to write and communicate science more effectively. Course Information: Satisfactory/Unsatisfactory grading only. Extensive computer use required. Meets eight weeks of the semester. Prerequisite(s): Consent of the instructor.

### **PSCI 505. Bioinformatics for Pharmaceutical Scientists. 1 hour.**

Bioinformatics for Pharmaceutical Science is designed to help graduate students to learn the basics of bioinformatics and to have hands-on experience in data analysis using the state-of-the-art tools. Course Information: Extensive computer use required. Meets eight weeks of the semester. Recommended background: PSCI 503.

### **PSCI 510. Principles of Pharmaceutics and Drug Delivery. 3 hours.**

Provides fundamental principles of pharmaceutics and drug delivery. Course Information: Credit is not given for PSCI 510 if the student has credit in BPS 501.

### **PSCI 518. Advanced Drug Delivery Systems. 2 or 3 hours.**

Controlled drug delivery systems utilizing polymers, synthesis of different types of devices, and the delivery expected from these devices, and mathematical modeling of delivery systems. Course Information: Previously listed as BPS 518. Prerequisite(s): Consent of the instructor.

### **PSCI 519. Principles of Polymeric Science and Engineering. 3 hours.**

Intermediate polymer science, thermodynamics of polymer solutions, phase separations, MW determination, crystallization, elasticity, kinetics and processing. Course Information: Previously listed as BPS 522. Prerequisite(s): MATH 220; or consent of the instructor.

### **PSCI 520. Research Techniques in Pharmacognosy. 3 hours.**

Provides an introduction to the techniques used in pharmacognosy research. Course Information: Previously listed as PMPG 510.

### **PSCI 521. Structure Elucidation of Natural Products. 3 hours.**

Provides an in-depth study of structure elucidation and dereplication of a natural product using modern computational methods and real-life examples. Course Information: Previously listed as PMPG 516. Prerequisite(s): MDCH 562; or consent of the instructor.

### **PSCI 522. Advanced Pharmacognosy. 3 hours.**

Provides an in-depth knowledge of the occurrence, biosynthesis and activity profile of biologically active natural products from plants, marine and microbial sources. Course Information: Previously listed PMPG 511. Prerequisite(s): Credit or concurrent registration in PSCI 520; or consent of the instructor or equivalent course.

**PSCI 523. Special Projects in Pharmaceutical Sciences. 1-3 hours.**

Overview of current research topics of interest in Pharmaceutical Sciences. Course Information: Previously listed as PMPG 565. Prerequisite(s): Completion of the first year of the program.

**PSCI 530. Principles of Medicinal Chemistry. 5 hours.**

Introduces concepts of graduate organic and physical organic chemistry as they relate to medicinal chemistry. Emphasis will be made on those topics of chemistry that are relevant to drug discovery and design. Course Information: Previously listed as MDCH 561. Prerequisite(s): Credit or concurrent registration in PHAR 422; or consent of the instructor. Recommended background: One year of organic chemistry with laboratory.

**PSCI 531. Spectroscopy in Pharmaceutical Sciences. 3 hours.**

The fundamental principles used to determine structure and conformation in molecules, emphasizing spectroscopic methods useful in solving structural problems and in analyzing dynamic biological processes. Course Information: Previously listed as MDCH 562. Prerequisite(s): Consent of the instructor or one year of physical chemistry.

**PSCI 532. Organic Medicinal Chemistry. 3 hours.**

Organic reactions are discussed in terms of their mechanisms and utility in the field of medicinal chemistry, particularly in the synthesis of medicinal agents. Course Information: Previously listed as MDCH 560. Credit is not given for PSCI 532 if the student has credit in MDCH 560. Prerequisite(s): One year of organic chemistry with laboratory.

**PSCI 533. Drug Design. 2 hours.**

Quantitative structure-activity relationships, computer graphics, molecular modeling and simulation, and chemometrics as applied to drug design and discovery. Course Information: No credit is given for PSCI 533 if the student has credit in MDCH 572. Previously listed as MDCH 572. Prerequisite(s): MDCH 561 or PSCI 530.

**PSCI 541. Pharmaceutical Applications of Genomics. 2 hours.**

Introduction to genomics for advanced pharmacy and graduate students. Principles of DNA sequencing and gene expression in human and microbial genomes, with emphasis on diagnostics and therapeutic applications. Course Information: Previously listed as PMMP 412. Prerequisite(s): PHAR 423; or consent of the instructor.

**PSCI 591. Internship in Pharmaceutical Sciences. 1-12 hours.**

Students spend time working in an entity unaffiliated with the department, such as an industrial or specialized laboratory, to obtain professional experience in a field of pharmaceutical sciences. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

**PSCI 592. Research Rotation in Pharmaceutical Sciences. 1-2 hours.**

Research rotation course in which first year students from the Pharmaceutical Sciences program will undertake projects in laboratories affiliated with this program. Course Information: May be repeated to a maximum of 4 hours. Students may register for more than one section per term. Meets eight weeks of the semester. To be taken fall and spring semesters of the first year of graduate study. Prerequisite(s): Consent of the instructor.

**PSCI 594. Special Topics in Pharmaceutical Sciences. 1-4 hours.**

Covers at least one of the five concentrations of research in pharmaceutical sciences: pharmaceuticals & drug delivery, pharmacognosy, chemistry in drug discovery, molecular mechanisms and therapeutics, and forensics. Course Information: May be repeated to a maximum of 4 hours if topics vary. Previously listed as MDCH 594.

**PSCI 598. Master's Thesis Research. 0-16 hours.**

Independent research project under the guidance of an advisor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

**PSCI 599. Ph.D. Thesis Research in Pharmaceutical Sciences. 0-16 hours.**

Independent dissertation research under the guidance of an advisor and committee. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.