PHARMACEUTICAL SCIENCES (PPS)

PPS-301 Principles of Pharmaceutical Sciences I (2 credits)
Achieving effective treatment of a disease, while minimizing adverse effects of a drug, requires rational selection, formulation and administration of an appropriate dosage form. Drugs are, first and foremost, molecules exhibiting both individual molecular properties, as well as the collective properties of molecules which make up the dose of an administered medication. This course will focus on the basic principles governing molecules, then consider equilibrium and kinetic phenomena and conclude with properties exhibited by dispersed systems such as colloids and dispersions. Information presented in the course will be foundational to subsequent Principles of Pharmaceutical Sciences courses, particularly the Pharmaceutical Dosage Forms course.

Prerequisite(s): Take BIO-101 BIO-101L BIO-102 BIO-102L CHE-101 CHE-101L CHE-102 CHE-102L CHE-219 CHE-219L CHE-220 CHE-220L PHY-101 PHY-101L PHY-112 PHY-112L

PPS-302 Principles of Pharmaceutical Sciences II (3 credits)
This second course in the Principles of Pharmaceutical Sciences sequence is designed to familiarize students in the BSPS program with general principles of drug action. Topics include an introduction to general terminology, drug-receptor interactions, receptor and ion channels, and second messengers.

Prerequisite(s): Take BIO-101 BIO-101L BIO-102 BIO-102L PPS-301

Corequisite(s): Take PPS-304 PPS-306

PPS-304 Pharmaceutical Dosage Forms (3 credits)
The purpose of this course is to provide a foundational knowledge in the concepts of pharmaceutics that are important for the design and function of pharmaceutical dosage forms. The course complements and completes PPS301, and applies pharmaceutics to dosage forms ranging from liquid and solid dosage forms to more complex novel and advanced delivery forms such as products of biotechnology.

Prerequisite(s): Take BIO-107 BIO-107L BIO-108 BIO-108L PPS-301

Corequisite(s): Take PPS-302 PPS-306

PPS-306 Principles of Pharmaceutical Sciences Practicum (2 credits)
The goal of this course is to introduce undergraduate students to the breadth of techniques used within the laboratories of pharmaceutical scientists. Students will discuss literature pertinent to the faculty member's research, and participate in laboratory activities. Students will complete laboratory safety training, and learn what is involved in planning, conducting and disseminating research.

Prerequisite(s): Take MAT-123 PPS-301

Corequisite(s): Take PPS-302 PPS-304

PPS-401 Principles of Pharmaceutical Sciences III (2 credits)
The pharmacokinetics and pharmacodynamics of drugs is due in large part to the chemical nature of drugs as molecules. This course considers the chemical characteristic of molecules that are important to the development and use of drugs. Topics to be considered include functional group characteristics and roles, drug binding and the effect of stereochemistry on drug action.

Prerequisite(s): Take CHE-219 CHE-219L CHE-220 CHE-220L PPS-301 PPS-302

Corequisite(s): Take PPS-403 PPS-405

PPS-402 Principles of Pharmaceutical Sciences IV (2 credits)
This course builds upon the Principles of Pharmaceutical Sciences course sequence to describe primary determinants of the disposition of drugs in the body, namely absorption, distribution, metabolism and excretion (ADME). Rudimentary dosing in response to ADME is calculated, and the impact of factors that may alter pharmacokinetics of drugs is presented in the final portion of the course.

Prerequisite(s): Take PPS-301 PPS-302 PPS-401

Corequisite(s): Take PPS-404 PPS-406

PPS-403 Drug Discovery and Development (2 credits)
An understanding of the drug development process will be foundational to the career choice of the student earning the undergraduate degree in pharmaceutical sciences. This course will provide the foundational info, as well as introduce the students to scientists who have chosen to work in industry or academia so that they may informally discuss their career choices and experiences with them.

Prerequisite(s): Take PPS-301 PPS-302 PPS-304

Corequisite(s): Take PPS-401 PPS-405

PPS-404 Individualized Medicine: Informatics and Pharmacogenomics (2 credits)
This course focuses on two areas of relevance to the pharmaceutical industry that utilize vast amounts of information from populations (informatics) as well as specific information from individuals (pharmacogenomics) to ultimately lead to more effective and personalized utilization of medicines.

Prerequisite(s): Take BIO-101 BIO-102 and one (1) 100 level computer science(CSC)course

Corequisite(s): Take PPS-402 PPS-406

PPS-405 Laboratory Research in the Pharmaceutical Sciences I (3 credits)
Critical to students' development as pharmaceutical scientists is the opportunity to conduct research under the guidance of faculty members. Working with the faculty member mutually-selected by the student and faculty advisor, the student is expected to develop a 2-semester hypothesis driven research project, conduct the necessary experiments to address the aims of the research project, and subsequently present the results of the research project in a forum that is open to the members of the department.

Prerequisite(s): Take PPS-301 PPS-302 PPS-304 PPS-306

Corequisite(s): Take PPS-401 PPS-405

PPS-406 Laboratory Research in the Pharmaceutical Sciences II (3 credits)
Critical to students' development as pharmaceutical scientists is the opportunity to conduct research under the guidance of faculty members. Working with the faculty member mutually-selected by the student, the student is expected to develop a 2-semester hypothesis driven research project, conduct the necessary experiments to address the aims of the research project, and subsequently present the results of the research project in a forum that is open to the members of the department. This course will complete the requirements for the project initiated in the fall semester.

Prerequisite(s): Take PPS-405

Corequisite(s): Take PPS-402 PPS-404