PHARMACEUTICAL SCIENCES (PHSI)

Pharmaceutical Sciences Undergraduate Courses

PHSI 1010 INTRODUCTION TO FOUNDATIONS AND CAREER PATHS IN PHARMACEUTICAL SCIENCES (1 credit)
This course provides an overview to the field of pharmaceutical sciences. It will discuss the roles of a pharmaceutical scientist and the career options one can pursue in pharmaceutical sciences. A description will be given for how a Bachelor of Science in Pharmaceutical Sciences (BSPS) degree prepares one for these options. Lectures will be given by UNMC/UNO faculty and practitioners in these fields. This course will introduce professional development related to pharmaceutical sciences, including concepts for application preparation for professional and graduate careers.

PHSI 2920 SPECIAL TOPICS IN PHARMACEUTICAL SCIENCES (2 credits)
More thorough examination of a pharmaceutical sciences topic than in the regular curriculum. Content (e.g., advocacy, alternative medicine) will vary with offering.
Prerequisite(s): PHSI 1010 with a grade of C- or higher

PHSI 3110 CURRENT RESEARCH TOPICS IN PHARMACEUTICAL SCIENCES (1 credit)
This course will provide the student with examples of how pharmaceutical science research is being applied to solve problems in the pharmaceutical industry. The basic approach for each lecture will be: 1) introduction to a disease state, 2) the current therapy for the disease state, 3) identification of the problems with this therapy and, 4) research underway to solve the problem. Lectures will be given by faculty members in the UNMC Departments of Pharmaceutical Sciences and Pharmacy Practice, UNO Department of Chemistry or special guests from industry and academia. Offered in Fall semesters.
Prerequisite(s): Prior completion of CHEM 2260 and CHEM 2274 with minimum grades of "C-" and passing score in PHSI 1010 OR instructor permission.

PHSI 3210 FOUNDATIONS OF MOLECULES TO MEDICINE (3 credits)
The first of a two courses sequence about the processes of drug discovery and how molecules become medicines. Emphasis will be placed on natural products and synthesized drugs, and the aspects involved in bringing drugs to the market (including target identification, validation, lead optimization, absorption/distribution/metabolism/excretion (ADME) phases and studies, investigational new drug (IND) options, and clinical trials).
Prerequisite(s): "C-" grade or higher in CHEM 2260 & CHEM 2274, and PHSI 1010. Also required: Concurrent enrollment in CHEM 4650 and 4654 or prior completion with minimum "C-" grade; OR instructor permission.

PHSI 3310 APPLICATIONS OF MOLECULES TO MEDICINE (3 credits)
Applications of Molecules to Medicines is a team taught course that will introduce students to five specific disease states and how commonly prescribed medications are used to improve patient outcomes. Emphasis will be placed on a basic understanding of disease pathogenesis and the medicinal and pharmacologic basic of specific medications that are prescribed and administered to patients in addition to determining whether the medication improves patient outcome.
Prerequisite(s): Prerequisites: "C-" grade or higher in CHEM 2260 & CHEM 2274, and PHSI 1010. Also required: Concurrent enrollment in CHEM 4650 and 4654 or prior completion with minimum "C-" grade; OR instructor permission.

PHSI 4010 INTRODUCTION TO PHARMACEUTICAL SCIENCE (3 credits)
Introduction to pharmaceutical terminology, drug discovery and development process, concepts and principles of pharmaceutical formulation and delivery, functional group chemistry, acid/base chemistry of drug molecules, chemical basis of drug action, receptor concepts, basic pharmaceutical calculations, principles of chemical kinetics and stability.
Prerequisite(s): Completion of MATH 1940 or MATH 1950; and CHEM 2260, CHEM 2274 with a C- or higher; completion with a C- or higher or co-enrollment in CHEM 4650 and 4654 or permission of instructor. Not open to non-degree graduate students.

PHSI 4210 CONTEMPORARY USE OF MEDICINES (2 credits)
This course provides an overview of medication access and use in the US considering innovation and general health care system dynamics. Discussions of current practices and trends will highlight key factors that pharmacists face in their profession, including social, policy, and behavioral factors that influence medication use in the United States. The course includes the perspectives of key stakeholders including providers, patients, payers, and the pharmaceutical industry.
Prerequisite(s): PHSI 1010 with a grade of "C-" or higher

PHSI 4410 PHARMACEUTICAL SCIENCES RESEARCH EXPERIENCE (1 credit)
Practical research experience for students in the bachelor of science program in Pharmaceutical Sciences. Students will work with faculty in UNO Chemistry with accepted PHSI research or UNMC Pharmaceutical Sciences or Pharmacy Practice to select and approve a research laboratory where they will carry out an independent investigation for one semester. Typically offered Fall and Spring semesters.
Prerequisite(s): "C-" or better in CHEM 4650 & 4654, PHSI 1010, and PHSI 3110; or permission of instructor.

PHSI 4510 ADVANCED RESEARCH EXPERIENCE IN PHARMACEUTICAL SCIENCES (1 credit)
The second of two courses of practical research experience for students in the Bachelor of Science program in Pharmaceutical Sciences. Students will work with faculty in UNO Chemistry or UNMC Pharmaceutical Sciences or Pharmacy Practice to select a research laboratory where they will carry out an independent investigation over the course of the semester.
Prerequisite(s): "C-" or better in CHEM 4650 & 4654, PHSI 1010, PHSI 3110 and PHSI 4410; or permission of instructor.

PHSI 4920 ADVANCED SPECIAL TOPICS IN PHARMACEUTICAL SCIENCES (2 credits)
In depth examination of a pharmaceutical sciences topic not offered in the regular curriculum. Content (e.g., Medicine and Cannabis) will vary with offering.
Prerequisite(s): PHSI 1010 with a grade of C- or higher, CHEM 2260 with a grade of C- or higher or permission of instructor