BIOCHEMISTRY (BCHM)

BCHM 410 - PHARMACEUTICAL BIOCHEMISTRY I
Knowledge of biochemistry is necessary to understand physiology and pathology of all cells, tissues and organ systems, as well as pharmacologic and therapeutic strategies employed in disease management. This clinically relevant biochemical knowledge base will be covered in two courses in the curriculum designated as Biochemistry I & II and are designed to produce specific educational and ability-based outcomes.
Credits: 4
Course Notes: Only for MS Pharmaceutical Sciences graduate students.

BCHM 418 - PHARMACEUTICS II
The course will familiarize the student with the physical and chemical principles governing pharmaceutical chemistry and dosage form development. The student will be introduced to how basic physical/chemical principles are important in the preparation, compounding of the dosage form, and disease-based or patient-centered decision making and therapeutic outcomes. The influence of physico-chemical principles on storage and administration of the various pharmaceutical dosage forms will also be covered in class.
Credits: 4.5
Course Notes: Only open to MSPS Graduate students

BCHM 419 - PHARMACEUTICS I: CALCULATIONS
This course focuses on the arithmetic operations involved in ensuring that accurate doses of medications are dispensed to patients. It is aimed at developing the pharmacy students' knowledge, skills and attitudes that would engender attention to detail, precision and accuracy in every operation that they perform so as to ensure that error-free, safe and efficacious medicines are dispensed to clients at all time. The course will develop students' skills in pharmaceutical calculations applicable to practice in conventional as well as in specialized settings such as prescription filling, medication order compounding, determination of dosage regimens and estimation of patients' compliance in community, clinical & hospital practice, industrial research and development, and in manufacturing.
Credits: 2
Course Notes: Only open to MSPS Graduate students.

BCHM 420 - PHYSICAL CHEMISTRY FOR BIOSCIENCE
Survey of the principles of physical chemistry that govern molecular structure and chemical reactivity in biochemical systems. Topics include thermodynamics, kinetics, quantum mechanics, computational chemistry and spectroscopic techniques and their application for the study of structure and functioning of biomolecules.
Credits: 3
Course Notes: CHEM 212 with minimum grade of C-, BIOL 301 recommended.

BCHM 421 - PHARMACEUTICS II
Pharmaceutics III is a continuation of the didactic and laboratory courses in Pharmaceutics I/II: Drug Delivery. The principles and mechanisms of drug absorption, distribution, metabolism, elimination (ADME), bioavailability and bioequivalence will be covered. Influence of the concepts on decision making regarding choice of drug, switching a drug within a pharmacologic/therapeutic class to another, compliance, wellness of patients, etc. will be discussed.
Credits: 3.5
Prerequisites: PHAR 418
Course Notes: Only open to MSPS Graduate students

BCHM 422 - FERMENTATION SCIENCE
Fermentation is a metabolic process, a hallmark of evolutionary history, a cultural practice, a vehicle for scientific discovery, an art form, and a commercial industry. This course examines the biochemistry of fermentation, its significance in foods and beverages, and applications in research and medicine. Discussions and field trips address the cultural history of fermentation as well as modern production methods. Students also make and share their own homemade ferments.
Credits: 3

BCHM 423 - PHARMACEUTICS III
Pharmaceutics III is a continuation of the didactic and laboratory courses in Pharmaceutics I/II: Drug Delivery. The principles and mechanisms of drug absorption, distribution, metabolism, elimination (ADME), bioavailability and bioequivalence will be covered. Influence of the concepts on decision making regarding choice of drug, switching a drug within a pharmacologic/therapeutic class to another, compliance, wellness of patients, etc. will be discussed.
Credits: 2
Prerequisites: BCHM 421
Course Notes: Only open to MSPS Graduate students

BCHM 430 - PRINCIPLES OF DRUG ACTION
This course is designed to provide background necessary to choose drugs based on their pharmacokinetic (absorption, distribution, metabolism and elimination; ADME), and pharmacodynamics (drug-receptor interactions, agonists, partial agonists, and antagonists) parameters and introduce students to pharmacology of drugs affecting the autonomic nervous system, as well as basic concepts in pharmacotherapy.
Credits: 3
Course Notes: Only open to MSPS Graduate students

BCHM 444 - BIOINORGANIC CHEMISTRY
Survey of biological molecules that involve metal ions and/or metal-containing cofactors; the interaction and biological significance of metal ions including medicinal applications.
Credits: 3
Course Notes: CHEM 212 with a minimum grade of C-; BIOL 301 recommended.

BCHM 455 - BIOCHEMISTRY
Electron transport chain, protein structure, enzyme kinetics, biosynthesis and intermediary metabolism of amino acids, and carbohydrates and lipids. Included in the biotechnology certificate program.
Credits: 3
Course Notes: BIOL 301 strongly recommended.

BCHM 456 - EXP. MTHDS BIOCHEM & BIOTECH
Biochemical techniques including enzyme and lipid assays, isolation, and analysis of macromolecules.
Credits: 3
Course Notes: Also for BIOL major credit.

BCHM 457 - ADVANCED BIOCHEMISTRY
This course covers advanced topics in the chemistry of life and is designed to build upon the fundamental understanding of biochemical topics as presented in introductory biochemistry. The course will focus on protein structure-function relationships and metabolic pathways in human and non-human organisms. Modern biochemical problems and new developments in biochemical techniques will also be explored through primary literature readings and student presentations.
Credits: 3
Course Notes: BCHM 355 with a minimum grade of C-

BCHM 485 - THESIS
Independent laboratory research culminating in a written thesis under supervision of a faculty sponsor and thesis committee.
Credits: 1-6

BCHM 485Y - THESIS COMPLETION
Credits: 0
Prerequisites: BCHM 485
Course Notes: Completion of the MS thesis beyond BCHM 485.

BCHM 491 - INDEPENDENT STUDY
Credits: 1-3
Course Notes: Instructor consent required

BCHM 492 - RESEARCH IN BIOCHEMISTRY
Independent field- or laboratory-based research experience under the supervision of a faculty sponsor. A minimum of 3 completed semester hours will fulfill the research requirement for the MS degree. Up to 3 semester hours may be applied toward thesis requirements. Students may register in consecutive semesters.
Credits: 1-4
Course Notes: Consent of instructor. $100 per semester hour. Students must arrange for independent laboratory research experience with a science faculty member prior to registration.

BCHM 493 - BIOCHEMISTRY SEMINAR
This course primarily involves searching, reading, and critiquing primary literature on biochemical topics, learning how to give a technical seminar, and presenting a seminar to technical audience. Weekly assignments will consist of reading, discussing, and writing short reviews of recent biochemical research published in the literature. You will learn how to give a technical presentation by attending and critiquing seminars presented by speakers within and outside of the Roosevelt community, and by preparing and giving a presentation on a literature topic of your choice.
Credits: 1

BCHM 495 - INDEPENDENT STUDY
Credits: 1-3