CHEM 327: The Art of Drug Design and Discovery

THIS COURSE WILL BE HELD AT NCI-FREDERICK The objective of this course is to explore the fundamental principles of modern drug discovery, with an emphasis on antiviral and anticancer drug design. A brief history of the discovery of hallmark drugs, such as penicillin, will serve as a backdrop for in-depth discussions on state-of-the-art techniques for target discovery and validation, lead discovery and lead optimization. Several classes of compounds with therapeutic potential will be discussed, such as peptides, carbohydrates, nucleosides and their analogs (mimetics). The latest methods in molecular modeling, high throughout screening and structure-activity relationships will be presented. The concept of 'rational' drug design based on high-resolution target structures derived from NMR and X-ray crystallography will be stressed. The course will benefit from guest lectures from outstanding researchers in specific fields of interest. This course is an elective for Advanced Studies in Technology Transfer.

Learning Objectives

- Gain a solid working knowledge of modern drug-discovery process
- Understand molecular basis for the mechanism of action of a variety of drug types
- Acquire chemical/biological insights necessary to apply what is learned to one's own research

Credits: 2
Class Type: Graduate Course
Prerequisites:
organic chemistry.
Program: Biochemistry, Chemistry, Pharmacology, and Toxicology