

School of Arts & Sciences Prospectus

Course ID: CHEM 7510-4010

Spring 2024

Chemical Biology of Drug Discovery

Course description: This course will introduce topics in Chemical Biology and pharmacology and how they are applied for both basic and translational research. The course is focused on how basic science technology can be applied to discover a drug. The main components include: (1) selection of a disease with a focus on rare diseases (2) selection of a target, and (3) determining whether or not a small molecule interaction with that target can be expected to produce a therapeutic response. Key concepts of drug discovery and other drivers of drug discovery are discussed throughout the course. Key technologies such as chemical proteomics and targeted degradation are covered. The advantages and disadvantages of small molecule tools versus genetic tools will be discussed.

Professor: Megan Matthews PhD (megamatt@sas.upenn.edu)

Class Structure: The class will be in person and consist of three modules:

Module 1: In-person lectures.

Module 2: Synchronous class discussion and proposal development during scheduled class time.

Module 3: Synchronous student presentations and class discussion.

Office hours: set based on student time zones

Grading Structure: 30% In-class presentation, 40% original proposals, 30% participation (planned!) with in-class quizzes

No textbook is required, but the following books are great sources for background material and as a reference guide.

“The Organic Chemistry of Drug Design and Drug Action” 2nd Edition, R. Silverman.

“Introduction to Bioorganic Chemistry and Chemical Biology” 1st Edition, David Van Vranken, Gregory A. Weiss