

PHM 809/001

CEM809/001

BMB961/003

# Drug Discovery and Medicinal Chemistry

## > Course Overview

PHM 809/001, CEM809/001, BMB961/003:

## Drug Discovery and Medicinal Chemistry

Drug Discovery is a complicated and fascinating adventure, engaging multiple disciplines, strategic decision-making, and problem-solving skills. The selection of a finalist from a pool of drug candidates is often driven by a careful balance of efficacy, safety and economic considerations. Expert practitioners have a knowledge in chemistry, biochemistry, molecular biology, pharmacology, informatics, toxicology and physiology to make key decisions.

This course will cover the fundamentals for the drug discovery process including but not limited to basic chemical knowledge, drug design principles, high-throughput screening, computational modeling, drug metabolic pathways and pharmacokinetic/ pharmacodynamic. The goal of this course is to equip students with the knowledges of discovery pharmaceutical research and to prepare them ultimately to work as a team-member in a discovery program.

## > Assessment

The assessment will be based on the attendance and the group project which the group will build up their drug discovery program throughout the semester based on the data given every week or 2 weeks after each covered topic.

## > Course Instructors

- Dr. Kin Sing Lee
- Dr. Edmund Ellsworth
- Dr. Rick Neubig
- Dr. Joe Gair
- Dr. Erika Lisabeth
- Dr. Alex Dickson
- Dr. Bryan Copple
- Dr. Andy Vick
- Dr. Keith Johnson
- Dr. Adam Lauver

## > Outline of Major Topics

- History of Drug Discovery and Development
- Screening Strategy
- Multiple Parameters Optimization
- Identification of Drug Targets
- Bioinformatics
- Drug Design and Optimization Strategies
- Computational Programs used for Drug Design
- Medicinal Chemistry
- Chemistry of Drug Metabolism
- Drug Formulation
- Pharmacokinetic/Pharmacodynamic/  
Toxicokinetic in Drug Development
- Development of an in vivo Model for Drug Assessment
- Biomarkers development

*(course topics subject to change)*

## > Course Information

Course Design: In person  
Schedule: 9:10a-10:00a, Tue-Thu  
Location: B448 Life Science Building

Course Number: PHM 809/001  
CEM809/001  
BMB961/003

Semester: Spring 2025  
Credits: 1 credit  
Grading: Quizzes, Discussions, Critical Analyses, Summary Exam

Students:

- Doctoral students from PHM, Chemistry, BMS program.
- Pre-approved PHM minor or CEM UG.

High Flexibility. Endless Possibility.