PHM809 (Section 001)/ CEM809 (Section 001) /BMB961 (Section 004): Drug Discovery and Medicinal Chemistry (2 Credits)

Schedule:

Spring 2020, Tuesday, Thursday (9:10 to 10 am)

Room: B448 Life Science Building / Zoom (depends on the COVID-19 Situation)

Instructors:

Dr. Kin Sing Lee, Dr. Edmund Ellsworth, Dr. Rick Neubig, Dr. Bin Chen, Dr. Erika Lisabeth, Dr. Marc Bailie, Dr. Alex Dickson, Dr. Bryan Copple, Dr. Jay Sisco.

Students:

PHM doctoral students, Chemistry doctoral students, doctoral students from BMS program, pre-approved PHM minor or CEM UG

Course Description:

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.

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

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.