SYLLABUS
Chemistry 130A: Pharmaceutical Chemistry
Spring 2018-Academia Sinica

Instructor of Record:
Professor Jacquelyn Gervay-Hague
jgervayhague@ucdavis.edu
Office Hours: By appointment.

TA: TBA

Lectures:
2:00-5:00 pm. Thursday
9:00 am - 12:00 pm Saturday
TIGP 207

Course Description: This class will provide an introduction to the bioorganic chemistry principles behind the design and production of pharmaceutical agents. Focus will be on explaining and predicting how small organic molecules bind to biological receptors, inhibit enzymes and get metabolized. This course will draw on and expand upon material covered in introductory organic chemistry such as proposing reasonable arrow-pushing mechanisms for organic reactions and predicting the reactivity of organic molecules with particular reagents.

Textbook: available on Canvas in Files folder

"The Organic Chemistry of Drug Design and Drug Action, 3rd Edition"
Richard B. Silverman and Mark W. Holladay

Course Grading:

Midterm Exam	40%
Final Exam	60%

Policies:

-**make ups:** ***There will be no early or late exams given.***

-**final exam:** You must take the final exam in order to pass this class. Students who fail to submit the final exam on time will receive a grade of "incomplete" only if written documentation for a legitimate reason for their absence is provided and they have a passing grade going into the final exam.

-**regrades:** Legitimate questions about the grading of an exam (either the grading of a particular problem or an addition error in the score) can be submitted up to one week after the exam is handed back. The procedure for handing back an exam for regrade is to attach a separate piece of paper to the front of the exam with your name, the question to be regraded and a brief justification for the regrade. Do not write on the exam itself or it may not be accepted for a regrade. **The entire exam will be regraded** when it is handed back for a regrade, not just the problem in question.

Strategies for success:

It is recommended that students attend all lectures and take detailed notes, which should become a primary study source. Also, complete and *understand* all the assigned problems. Don't wait to start studying. Reread notes and work problems after every lecture. Last minute cramming rarely works in any organic chemistry class. Exam material will almost entirely come from the class notes and assigned problems. Group study is also highly recommended. The group can compare class notes and help each other understand the material.

Outline of Lecture Topics

Lecture 1:	The Story of Aspirin:
Concepts to be covered -	Basic Organic Chemistry Principles
	Natural products
	Drug Discovery
	Clinical Trials
	Enzyme structure
	Lead compounds
	Pharmacophore
	Lead modification
	Prodrug
	Bioavailability and biodistribution
	Rule of five
Lecture 2:	The Story of Cis-Platin:
Concepts to be covered -	DNA as a target
	SAR
	Types of drug receptor interactions
	Mechanism of Action
	Selective targeting
Lecture 3:	The Story of Tamiflu:
Concepts to be covered -	Viral protein targets
	SAR to achieve Enzyme inhibition
	Competitive inhibition
	Small molecule prophylactic
	Drug/protein interactions
Lecture 4:	The story of HIV:
Concepts to be covered -	Viral replication
	Structure of RNA
	Mechanism of Action
Lecture 5:	The story of Penicillin:
Concepts to be covered -	Bacterial replication
	Resistance
	Compliance
Lecture 6:	A Big picture view of Pharmaceutical Science
Concepts to be covered -	Biologics, Vaccines, Nutrition and Health