Chem 445 Spring 2021

Synthesis and Analysis of Organic Compounds

Course meetings: MWF 9:30–10:20 am

**Zoom Registration**: All students need to register for the zoom lecture class via the link below:

https://hawaii.zoom.us/meeting/register/tJcpf-mspzluHdWjRQ0DQ-

8oy3\_4hu0P8eln . Please do so prior to the start of classes.

Instructor: P. Williams philipwi@hawaii.edu

Bilger 240 808-956-5720

Office hours by appointment

**Course Objective:** The objective of Chemistry 445 is for students to develop a broader

understanding of modern synthetic organic chemistry. In particular, lectures will focus on the underlying theory governing stereoselective synthesis, and on the chemical characterization of organic compounds in order to deduce planar structure (2D & MS) and stereochemistry. Examples will include the application

of these instrumental techniques to biological macromolecules.

**Prerequisites:** Chem 273 and Chem 273L; C not C- or better in both; Declared Chemistry or

**Biochemistry Major** 

**Textbook:** There is no required textbook for this course. Students will be provided with

background readings when needed. Students will be required to draw chemical

structures and mechanisms during lectures and share those answers

electronically. Students should prepare accordingly.

**Exams** Exam #1 Monday, March 1<sup>st</sup>

Final Exam Friday, May 14<sup>th</sup> @ 9:45-11:45 am.

**Homework** Homework will be assigned at various points of the semester.

**Grading:** The midterm exam will be worth 100 points, homework will be worth 100 points,

and the final exam will be worth 200 points for a total of 400 points. **Participation** will count for 45 points. Final grades will be determined from the average of

the raw scores. The following tentative scale will be used:

A+ 90-100; A 85-89; A- 80-84; B+ 75-79; B 70-74; B- 65-69; C+ 60-64; C 55-59;

C-50-54; D+45-49; D 40-44; D-30-39; F 29-0.

**Exam Conditions:** Exams will be proctored over zoom. The general conditions and requirements

can be found on UH's testing website: Student Preparation for Remote

Proctoring – University of Hawaii at Manoa

**Code of Conduct:** Academic honesty policies can be found at the following website:

http://www.studentaffairs.manoa.hawaii.edu/policies/
. Students are expected to familiarize themselves with these rules. Any student caught violating the policies on plagiarism or cheating will receive a grade of an "F" in the

course.

**Disabilities:** The University of Hawaii is an equal opportunity/affirmative action institution,

dedicated to teaching all students and reaching all learners. It is our commitment to make our lectures and classrooms accessible to all students. If you have, or think you might have, a disability and have not voluntarily disclosed its nature

and the support you need, you are invited to contact the UH KOKUA Program (http://www.hawaii.edu/kokua/ or (808) 956-7511), or talk with the instructor in order to get any accommodation you might need to take the course. This information will be kept confidential. Please do this as early in the course as possible.

## **COVID** disclaimer

The syllabus and course policies may be modified in the event of any unforeseen shutdowns or issues related to COVID that impact the class. These modifications including but are not limited to changing exam date, homework due dates, or change the number of midterms and grading. Students shall be notified in writing and in advance of any such changes.

Acceptable resources: Acceptable resources for students to use in this class are limited to the lecture notes and slides, assigned readings, organic chemistry textbooks, and the primary literature.

## **Student Learning Outcomes:**

- 1. To understand the consequences (reactivity, properties) of the three-dimensionality of molecules,
- 2. To be able to interpret patterns of reactivity on the basis of mechanistic reasoning,
- 3. To be able to deduce molecular structures from 2D NMR spectroscopic data,
- 4. To understand the design of instrumentation commonly used in an organic chemistry lab, e.g. NMR, MS, GC, HPLC, and how these design factors impact the resulting data.