

Chemistry 12B—L2/L2L  
Organic Chemistry II  
Class Code: 21490 Lab: 21491  
Laney College  
Spring Semester 2019

Lecture Instructor: Prof. William Trego

Prof. Trego's Office: A276 (Enter through A277)

Lecture Time: M,W: 5:00 – 6:15 PM

Lecture Room: A239

Lab Time: M,W: 7:00 – 9:50PM

Laboratory: A277

Email: wtrego@peralta.edu (preferred mode of communication)

Website: Canvas

Office Hours: T 9:15-10:15 AM, M/W: 3:45-4:45 PM; R: 3:50-4:50 PM; Other times are available by appointment.

**Prerequisites: CHEM 12A with a C or better (or an equivalent course from another school)  
No Exceptions!**

**Course Description:** Continuation of CHEM 12A: Reactions of functional groups and interactions of polyfunctional compounds, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, ultraviolet-visible spectroscopy. Introduction to biochemistry: Lipids, carbohydrates, proteins, nucleic acids. Laboratory work includes reactions, purification methods, measurements, multistep syntheses, qualitative analysis, and use of instrumentation.

### Student Learning Objectives

1. Apply naming rules (nomenclature) to name or draw the structures for organic molecules and, where appropriate, indicate stereochemistry.
2. Describe the overall structure and properties of organic molecules using the principles of chemical bonding, atomic hybridization, and orbital theory.
3. Apply thermodynamic and kinetic principles to characterize organic chemical reactions and mechanisms.
4. Use common spectroscopic techniques (NMR, IR, UV/Vis, MS) to determine the molecular structure of organic compounds and also to correlate with chemical reactivity.
5. Operate in the laboratory using routine acceptable safe laboratory practices to handle chemicals, glassware, and common laboratory equipment. (Apply the precautionary principle when handling hazardous materials, especially those of unknown toxicity.)
6. Record laboratory results and data correctly into a scientific notebook and report and interpret results using appropriate notational and descriptive content in standard scientific format.
7. Devise synthetic approaches to relatively simple organic compounds using the concepts of multi-step synthesis, which includes retro-synthetic analysis.

## Required Text:

Klein, David. *Organic Chemistry*, 3rd ed., (New York: Wiley), 2017. (ISBN: 978-1-119-31615-2)

## Recommended Supplements:

Klein, David. *Study Guide and Solutions Manual*

Organic Chemistry Model Set (although it is optional, it is **highly** recommended).

## Evaluation

Midterm Exams 1-3	(55%)
ACS Final Exam	(10%)
Quizzes	(10%)
PoTD	(5%)
Lab	(20%)

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**Exams and Quizzes**—Three midterm exams, a final exam and six quizzes will be given this semester. The final exam will consist of the American Chemical Society standardized multiple choice exam. The midterm exams will be given during the Wednesday lab sessions on 2/13, 3/27, and 5/8. The ACS exam will be given during final exam week on 5/22. **The score of the final exam will replace the lowest midterm score (provided the final exam score is not lower).** Quizzes will be given periodically throughout the semester. The scope of the quiz will be announced on the preceding Monday. The three midterm exams will contribute 55% toward the final grade, and the ACS final will constitute 10% of the final grade. The average of the student's five highest scoring quizzes will contribute 10% toward the final grade.

**Problem of the Day**—A "Problem of the Day" will be assigned at the end of most lectures. The completed problem will be due at the ***beginning*** of the following lecture. Additional suggested problems from the textbook will be listed on the PotD handout. These supplemental problems will not be collected. **The lowest two scores in this category will be dropped—thus these assignments will not be accepted after the deadline.**

**ACS Exam**—The ACS organic chemistry exam consists of 70 multiple choice questions that cover the entire year of organic chemistry, including interpretation of infrared and nuclear magnetic resonance spectra. A number of schools and programs consider the score on the ACS exam in the admissions process. Study guides for the exam are available for purchase from the American Chemical Society, and several copies of the guide will be placed on reserve in the library.

**Laboratory**—One grade will be assigned for the course (lecture and lab combined). You must pass the lab component (i.e. receive at least 65% of the points) to pass the course. The lab schedule and policies are addressed in a separate syllabus.

**Grades**—Letter grades will be assigned according to the scale below.

89-100 %	A
79-88.9 %	B
65-78.9 %	C
50-64.9 %	D
under 50 %	F

**Attendance Policy:** According to Laney College policy, students are allowed a total of two weeks of absence. Thus, if you fail to attend 5 class meetings or more, you will be dropped from the class.

The lowest quiz score will be dropped in calculating the final grade—**thus makeup quizzes will not be offered this semester**. If you miss an exam, it will be recorded as a zero. The final exam score will be used as the score for the missed exam, for **excused absences**. Students must email Prof. Trego before the exam to communicate the nature of the absence. The substitute exam grade policy can only be used once during the semester. **While you can take a midterm before the scheduled date, exams will not be given after the scheduled date.**

**Grading/Regrading/Deadlines:** Exams and quizzes will be graded and returned in a timely manner. Students should consult the key (posted online) before asking questions about scoring. Questions/concerns about scoring should be brought to the attention of Prof. Trego within one week of receiving the graded assignment. If a student requests that the scoring of their assignment be compared to that of a classmate, both students must be willing to have their assignments rescored. **Lab reports and other assignments will not be accepted after the last day of instruction (5/16/2019).**

### **Student Expectation and Responsibility**

- Class begins at 5:00 PM. Please make every effort to arrive on time. If there are circumstances that will consistently prevent you from arriving on time, please consider enrolling in a different section of the course. Excessive tardiness is not only disruptive, but is generally a detriment to success.
- Please silence or turn-off cell phones and other noise making devices before lecture begins. Please refrain from texting during lecture.
- Students are welcome to record lectures provided that it is used solely by the student making the recording. Professor Trego will not give permission to publish recordings of his lectures online.
- Please check your email account registered on Passport frequently. All email communication initiated by the instructor will be sent to the account registered with Passport. In some cases, this may be the student email account automatically generated upon enrolling in the Peralta district. Instructions on the use of this email account can be found at: <http://web.peralta.edu/it/studentemail/>
- The student is responsible for her or his enrollment status in the class. Please be attentive to the pertinent deadlines. The administration will not approve drops after the published deadlines.
- Prof. Trego will comply fully with accommodations prescribed by DSPS. Students with accommodations should submit the DSPS form to Prof. Trego at the beginning of the term. Students with exam accommodations are responsible for scheduling a time to take the exam at the testing center or with Prof. Trego. Students who require a note-taker should speak to Prof. Trego about recruiting a classmate to provide photocopies of their notes.

**Plagiarism and Cheating:** Plagiarism (misrepresenting the work of another as your own) and cheating (looking upon another student's paper during an exam or quiz, and/or using a "cheat sheet") will result in an F for the exam or quiz, and could result in failing the course. All instances of cheating or plagiarism will be reported to the Dean for further action by the College.

### Tentative Lecture Schedule

Date	Section in Text	Topic
M 1/21		<b>No Class—MLK Holiday</b>
W 1/23	8.1-8.11, 13.9	<b>Course Introduction;</b> Alkene Addition Reactions
M 1/28	8.12-8.14, 23.4 9.5-9.7	Alkene Addition Reactions/Alkyne Addition Reactions
W 1/30	9.8-9.11	Alkyne Addition Reactions <b>Quiz 1</b>
Su 2/3	<b><i>Last Day to Add and Last Day to Drop without receiving a "W"</i></b>	
M 2/4	16.1-16.3, 16.16.11	Dienes: Properties and Addition
W 2/6	16.4-16.7	Dienes continued Diels Alder Reaction
M 2/11		Diels-Alder Reaction cont... Exam Review
W 2/13		<b>Exam 1</b>
M 2/18	<b>No Class—Presidents Day Holiday</b>	
W 2/20	16.8-16.10	Electrocyclic Ring Closure and Opening Reactions
M 2/25	17.1-17.3	Nomenclature for Substituted Benzene Derivatives Electronic Structure of Benzene (and other aromatic compounds)
W 2/27	17.4-17.7	Reduction of Aromatic Ring and Reactions at the Benzylic Carbon <b>Quiz 2</b>
M 3/4	18.1-18.4	Aromatic Substitution Reactions
W 3/6	18.5-18.12	Aromatic Substitution Reactions
M 3/11	18.13-18.15, 22.10-22.11	Nucleophilic Aromatic Substitution and Sandmeyer Reaction
W 3/13	23.6, 23.8	Palladium Mediated Coupling Reactions <b>Quiz 3</b>
M 3/18	19.2	Nomenclature for Aldehydes and Ketones
W 3/20	20.2, 20.6, 22.2	Nomenclature for Carboxylic Acids, Derivatives, and Amines
M 3/25	19.4-19.6	Properties and Reactions of Aldehydes and Ketones <i>Exam Review</i>
W 3/27		<b>Exam 2</b>
M 4/1		<b><i>No Class—Spring Recess</i></b>
W 4/3		<b><i>No Class—Spring Recess</i></b>
M 4/8	19.7-19.11	Reactions of Aldehydes and Ketones
W 4/10	20.3-20.5	Properties and Reactions of Carboxylic Acids <b>Quiz 4</b>
M 4/15	20.6-20.11	Reactions of Carboxylic Acids
W 4/17	20.12-20.14	Nucleophilic Acyl Substitution

M 4/22		Nucleophilic Acyl Substitution
W 4/24	21.1-21.2	Reactions of Enols and Enolates <b>Quiz 5</b>
F 4/26	<i><b>Last Day to Drop with a W</b></i>	
M 4/29	21.3, 21.5	Reactions of Enols and Enolates Exam Review
W 5/1	22.1, 21.4, 22.3- 22.5	Amines <b>Quiz 6</b>
M 5/6	22.6-22.7, 22.9	Amines <i>Exam Review</i>
W 5/8	<b>Exam 3</b>	
M 5/13		Synthesis of Atorvastatin Calcium
W 5/15		<b>Final Exam Review</b>
W 5/22	<b>Final Exam—5:00 PM</b>	