



Chemistry F325, Organic Chemistry II Laboratory, 1.0 Credits
Reichardt 245

: Lecture component of Chem 325, Organic Chemistry II.
: Chem 321 Organic Chemistry I (includes Laboratory)

F01	34386	Thursday	11:30	2:30	TBA
F02	34387	Thursday	2:45	5:45	TBA
F03	34388	Thursday	6:00	9:00	TBA

Thomas Green, Professor of Chemistry

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Office Hours: Tuesday 1-3 pm, by Zoom

See TA Office Hours. <https://www.uaf.edu/chem/clc/>

1. Laboratory Manual with all experiments and reports forms, supplied to you by instructor.
2. Lab notebook for recording experimental data, results and conclusions. The lab notebook will be supplied by the department. Student Lab Notebook, 2012 Book Factory, Lab-050-7GSS, 50 pages.
3. Textbook: Making the Connections³; A How-to-Guide for Organic Chemistry Lab Techniques, 3rd edition, Anne B. Padias, 2015, Hayden McNeil.

A laboratory designed to illustrate modern techniques of isolation, purification, analysis and structure determination of covalent, principally organic, compounds. Lab portion will include an introduction to synthetic techniques and spectroscopy. Special fees apply.

Learn the following practical aspects of organic synthesis.

1. Common safety procedures.
 2. Reaction methods
 3. Isolation Procedures
 4. Purification techniques
 5. Spectroscopic and chromatographic analyses
 6. Introduction to computational methods in chemistry.
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1. Know the hazards associated with common chemicals, especially those encountered in the experiments.
 2. Know how to safely assemble reaction systems using glassware commonly employed in the organic laboratory. These methods include reflux, heating and cooling of reactions, and addition of reagents.
 3. Know how to isolate and purify organic products using methods such as extraction, filtration, crystallization, distillation, solvent removal, and thin layer chromatography.
 4. Learn the importance of stoichiometry to a chemical reaction. Learn how to assess the efficiency of a chemical reaction (percent yield and atom economy).
 5. Learn the practical aspects of spectroscopic analyses of organic compounds.
 6. Learn how to build and optimize simple molecules using WebMO/Gaussian and how to measure properties of those molecules.
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1. The instructor or teaching assistant will provide a brief introduction on the practical aspects of organic chemistry, using a combination of Power Point slides and Chalkboard. The Lab Schedule will be available on Blackboard and at the end of this syllabus.
 2. Laboratory sessions will consist of conducting reactions of organic compounds and their isolation, purification and characterization.
 3. Each lab session will consist of Pre-lab and Post-lab components. The Pre-lab portion must be completed prior to coming to lab. If it is not completed, you will not be allowed to work in the lab for that day. Your TA will need to verify with her/his initials that you have completed the pre-lab questions. Students are also required to keep a laboratory notebook. The lab notebook will be collected at the midterm, evaluated but not graded, and returned with suggestions for improvement. The lab notebook will be graded at the end of the semester.
 4. A lab textbook by Anne Padias which describes techniques, glassware, lab notebooks, spectroscopic techniques, etc. Readings will be assigned to the student for each experiment.

Before each lab, you should enter the following in the notebook (with pen).

1. Title of Experiment
2. Hypothesis or Goal of Experiment
- 3.

During lab, you should enter the following,

6. Data and observations. Record actual amounts (volumes or mass) used for each reagent. Record physical constants such as melting point range of the product. If you ran a TLC plate, sketch plate in the notes

see Canvas for specific Experimental Procedures and Report Forms.

No Lab	Jan 13. 20	No Lab	--
HW 1: NMR of Unknowns (30)	Jan 27	¹³ C, ¹ H NMR, IR Structure Determination	13
HW 2: Mass Spectrometry (30)	Feb 3	Structure Determination, Fragmentation of Functional Groups	12
Exp 1: Solvent extraction of Natural Product (50)	Feb 10	Mass Spectrometry; Solvent Extraction	12
Exp 2: Diels-Alder Reaction (50)	Feb 17	Reflux, NMR Coupling Constants, Modeling	15

Exp 3a: Iodination of Vanillin

Students should keep up-to-regularly checking this website:

<https://sites.google.com/alaska.edu/coronavirus/uaf/uaf-students?authuser=0>

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