

CHEM F325

Organic Chemistry II

Spring 2020

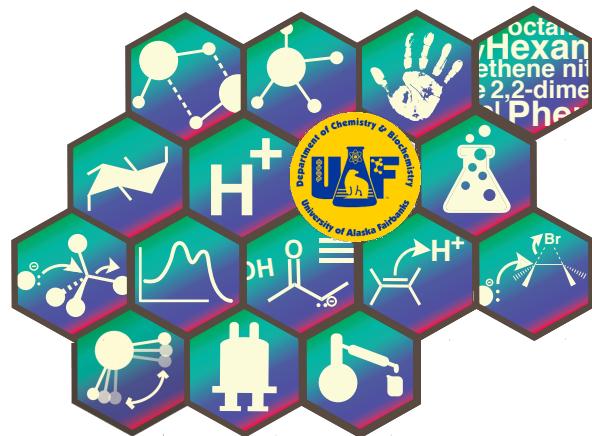
CRN(s): 34006, 34007, 34008

Credits: 4 credits

Lecture: REIC 202, MWF 1:00-2:00 PM (in person)

Lab: REIC 241, Various Times

Prerequisite: Chem F321 with grade C or better



Lecture Instructor



Jennifer Guerard, Ph.D.

Office: REIC 180

Office Hrs: Wed 1030am-1200pm

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Lab Instructor



Thomas Green, Ph.D.

Office: REIC 174

Office Hrs: Tues 100-200pm

Phone: (907) 474-1559

Email: tkgreen@alaska.edu

Lab syllabus TBD

Catalog Course Description A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis, and physical and spectroscopic properties. Lab portion will include an introduction to synthetic techniques and spectroscopy.

Course Goals The goals of this course are to understand the fundamental concepts of bonding of organic compounds, how conformations of hydrocarbons relate to stability, basic concepts of stereochemistry, reactions and associated mechanisms of hydrocarbons, and the use of spectroscopic techniques to determine structure of organic molecules.

Course Structure Coursework will follow topics in the order described on the Tentative Lecture Schedule. The instructor will lecture using slides and/or whiteboard, providing copies of notes to the students via Blackboard. Clickers, quizzes, homework, in-class activities, and exams will assess student understanding of concepts. Lab schedule/syllabus will be handed out during lab sections.

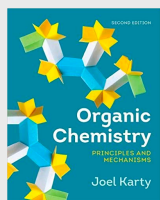
Course Materials

Required Materials:

Lecture Text: Karty, J. *Organic Chemistry: Principles and Mechanisms* 2nd ed. Norton, 2018

Print versions come with solutions manual study guide – **super** helpful

Laboratory text: Padias, A. *Making the Connections: A How-to Guide for Organic Chemistry Lab Techniques*, 3rd ed.

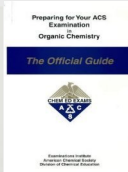
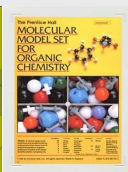


Other Required Materials:

- o Lab book (see details in Blackboard)
- o NON-graphing scientific calculator
- o TopHat Subscription
- o Alchemie Mechanisms
- o Internet/computer access (available in REIC 172), regularly checking Blackboard and email

HIGHLY Recommended Materials:

- o Klein, D. *Organic Chemistry as a Second Language: Second Semester Topics*, 4th ed. Wiley, 2016
- o Eubanks, I. Dwaine. *Preparing for Your ACS Examination in Organic Chemistry: The Official Guide*
- o Molecular model kit – my favorite is in the UAF bookstore
- o



Important Dates:

Jan 13 First day of class
Jan 24 Last day for late registration, drops with no appearance on academic record
Feb 7 EXAM I
Mar 6 EXAM II
Mar 27 Last day for withdrawal with W
Apr 3 EXAM III
Apr 22 EXAM IV
Apr 27 Last day of class
Apr 29 FINAL 1-3pm

Student Learning Outcomes A more detailed list of more specific learning outcomes for each chapter is posted on Blackboard and sent via Blackboard before each quiz. Broadly, at the end of this course, students should be to:

- Understand fundamental concepts of bonding and acidity
- Name a variety of organic compounds with varied functional groups.
- Predict reactivity of organics involving nucleophilic addition/ elimination, aromatic substitution, and radical mechanisms.
- Know common reagents to transform one functional group to another.
- Interpret IR, NMR, and M/S spectra to arrive at a structure.
- Draw and interpret 3D structures of stereoisomers.
- Predict and write out mechanisms of reactions based on fundamental concepts of acid/base chemistry (nucleophiles/electrophiles).
- Write out synthetic pathways using the correct order of reactants and reagents in order to arrive at a target molecule.

Evaluation and Grade Assignment:

A = 900 – 1000 points

B = 800 – 899 points

C = 700 – 799 points

D = 600 – 699 points

F = 0 – 599 points

Final Grade Rounding Policy: If cumulative final grade is within 5 points of a grade point cutoff **AND** final exam percentage falls into a letter grade above that from the cumulative letter grade, then final grade will be rounded up to next letter grade. **No other rounding will occur.**

Your instructor follows the UAF Incomplete Grade Policy:

"Incomplete" is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of work in a course but for personal reasons beyond the student's control, such as sickness, has not been able to complete the course during the regular semester. Negligence or indifference are not acceptable reasons for an "IN" grade."

Notes and Policies

Homework (Hmwk) consists of near-daily assignments derived from the textbook and graded for completion, each out of 10 points. Expect homework to take *at least* a few hours each week. All listed assignments are posted on Blackboard and are due at the start of class (either turned in in class, emailed, or to professor's mail box in REIC 194 – make sure any scans, photos, or written assignments are legible and clear to read!). HW will be averaged and scaled to 100 points. Extra credit assignments will average into the total homework score.

Assignments should be written on paper with your name as it appears on UAOnline and Assignment listed at top left. If multiple pages, please staple together and write name on all pages. Label each question clearly and write neatly and legibly. Note some questions have been abbreviated in homework compared to textbook. Only listed question parts in homework packet are required.

Laboratory 250 pts	Exam I 100 pts	Exam II 100 pts
	Exam III 100 pts	Exam IV 100 pts
ACS Final 150 pts	Hmwk 100 pts	Quizzes 80 pts
Alchemie 20 pts		

Hmwk Extension Policy: A 2-day extension period is allowed to apply either all to one homework of a student's choice or to split into two 1-day extensions on two assignments of their choice. In these cases, this must be communicated to the professor before assignment due date by email, and then assignment must be turned in via methods above by 1:00 pm on the extended due date.

Exams allow the use of molecular model kits and non-programmable calculators only. You must turn in your exam before leaving the room. The final exam will be the American Chemical Society Organic Chemistry exam, covering the entire 2-semester course sequence of organic chemistry (CHEMF321 & CHEMF325). Grading on the ACS exam will be applied to the course grade after scaling according to the following formula:

$$\text{Final Exam Points} = (\text{ACS_SCORE} + 40) / 100 * 150$$

Quizzes. 9 quizzes (lowest score dropped) will be administered by paper or TopHat, each worth 10 points for a total of 80 points (see syllabus schedule; 5 questions each, ~15 min). Students will be notified ahead of time of the format for upcoming quizzes.

Top Hat. Several in-class activities involve individual responses using TopHat on an internet connected or text-capable device. **It is thus important to attend and bring your device to class every day.** It is the student's responsibility to bring the device to each class, replace if lost, verify it is registered correctly on the instructor's database, and keep in functioning condition. **It is ultimately the student's responsibility** to address problems with their device and/or check with the instructor concerning their clicks. **TopHat registration must occur by TUESDAY Jan 21, 11:59 PM.** Registration directions are posted on Blackboard. If you do not own a compatible device please notify the instructor for appropriate tech. accommodations.

Alchemie Mechanisms. Instructions are on Blackboard under Course Materials for App download / registration. If you do not own a compatible device please notify the instructor for appropriate tech. accommodations.

Instructor-Initiated Withdrawals. Until **Friday, Mar 27th** the instructor has the right to withdraw a student who has not participated substantially in the course. Any (or combination) of the following constitute non-participation: 1) Missed exam or 2 quizzes without excused absence, 2) At least 2 incomplete homework assignments, or 3) Less than 50% attendance as registered by TopHat participation.

Mobile Devices and Laptops. Devices are used during class for participation, worksheet access if desired, and

course activities. Devices must be turned to silent or "vibrate" mode during class. Only usage of electronic devices that facilitates learning is permitted.

Absences. Make-up exams/quizzes are *only* allowed in the event of a legitimate cause **and** proper notification to the instructor. Known absences (e.g., intercollegiate sports, travel for military or university purposes) are required to provide notification by email **before** the absence; unexpected/emergency absences (e.g., illness, family, or personal emergency) must provide notification at the earliest possible opportunity. Students may be asked to provide documentation for the absence. Make-ups should be scheduled **as soon as possible** from the originally scheduled date. *Summary: If you have **any** absences, or questions about absences/make-ups, email your instructors: Dr. Guerard (iguerard@alaska.edu) for lecture, and Dr. Green (tkgreen@alaska.edu) for lab.* Any extra credit opportunities are not eligible for makeup or extensions.

Ethical Considerations and Honor Code. Students must adhere to UAF policies, the student code of conduct as well as the University of Alaska *Honor Code*. The Chemistry and Biochemistry Department Policy on Cheating states: Any student caught cheating will be assigned a course grade of F. The student's academic advisor will be notified of this failing grade and the student will not be allowed to drop the course. Use of cell phones or electronic devices other than a non-programmable scientific calculator during exams constitutes cheating and will result in an F in the course.

UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: alaska.edu/nondiscrimination.

Support & Accommodations

Chemistry Learning Center (CLC) – CHEM 325 TAs keep regular office hours (www.uaf.edu/chem/clc/) and will be posted on Blackboard. REIC 172 is available for course use www.uaf.edu/chem/instrumentation/policies

Student Protections and Services Statement. Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/. **Veteran Support**

Services. Walter Crary (wecrary@alaska.edu) is the Veterans Service Officer at the Veterans Resource Center, 111 Eielson Building, 474-2475. Fairbanks Vet Center: 456-4238. VA Community Based Outpatient Clinic at Ft. Wainwright: 361-6370. **Disabilities**

Services. The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (*208 Whitaker, 474-5655) to provide reasonable accommodation to students with disabilities.

Student Support Services. The Student Support Services (SSS) program (trio.sss@alaska.edu), located in 512 Greuning (474-6844), provides opportunities for academic development, assists students with college requirements, and serves to motivate students toward successful completion of their degree programs. For more information: 474-6844 www.uaf.edu/sss/

Amending this Syllabus: *Before the drop date, I may revise the syllabus to correct for any errors. Revision at a later time would require majority vote by students present in class on day issue is decided. Adjustments to the lecture schedule and homework due dates may be made at the instructor's discretion anytime during the semester. Any revisions will be distributed via Blackboard and announced in class.*

CHEM F325 Spring 2020 Tentative Schedule

Wk	Date	Topic	Assigned Readings	Klein	Assignments & Quizzes
1	M 1/13	Mass Spec	16: 16.16-16.19, IC G		
	W 1/15	Nuc Add I	17a: 17.1-17.4	Ch 6	
	F 1/17		17b: 17.5-17.9		
2	W 1/22	Nuc Add I	17c: 17.10-17.13		Quiz 1, HW 16 due
	F 1/24		17c: 17.10-17.13		HW 17a due
3	M 1/27	Nuc Add II	18a: 18.1 – 18.3	Ch 6,8	HW 17b due
	W 1/29		18b: 18.4 – 18.9		HW 17c due
	F 1/31		18c: 18.10-18.11		Quiz 2, HW 18a due
4	M 2/3		18c: 18.10-18.11		HW 18b due
	W 2/5		Practice Problems		HW 18c due, Alchemie 1-4 due 2/6
	F 2/7		EXAM I: Ch 16-18		
5	M 2/10	Org Synthesis II	19a: 19.1-19.2		
	W 2/12		19b: 19.3-19.5		
	F 2/14		19c: 19.6-19.7		Quiz 3, HW 19a due
6	M 2/17	Nuc. Add. Elim. I	IC F, 20a: 20.1, 20.3	Ch 7	HW 19b due
	W 2/19		20b: 20.2, 20.4-20.5		HW 19c due
	F 2/21		20c: 20.6-20.8		Quiz 4, HW 20a due
7	M 2/24	Nuc. Add. Elim. II	21a: 21.1-21.3		HW 20b due
	W 2/26		21b: 21.4-21.8	Ch 7	HW 20c due
	F 2/28		21c: 21.9-21.10		Quiz 5, HW 21a due
8	M 3/2		21d: 21.11-21.14		HW 21b due
	W 3/4		Practice Problems		HW 21c due, HW 21d due, Alchemie 5-6 due 3/5
	F 3/6		EXAM II: Ch 19-21		
☺ ☺ SPRING BREAK WEEK – PRACTICE ORGANIC CHEMISTRY ☺ ☺					
9	M 3/16	Aromaticity	Ch 14	Ch 1	
	W 3/18	EAS I	22a: 22.1 – 22.7	Ch 4	
	F 3/20		22b: 22.9		Quiz 6, HW 14 due
10	M 3/23	EAS II	23a: 23.1-23.6		HW 22a due
	W 3/25		23b: 23.7-23.9	Ch 5	HW 22b due
	F 3/27		23c: 23.10-23.12		Quiz 7, HW 23a due
11	M 3/30		Spectroscopy Review		HW 23b due
	W 4/1		EXAM III Review		HW 23c due, Alchemie 7-8 due 4/2
	F 4/3		EXAM III: Ch 14, 22, 23		
12	M 4/6	Pericyclic Reactions	24a: 24.1-24.6	Ch 10	
	W 4/8		24b: 24.7-24.10		
	F 4/10		25a: 25.1-25.4		Quiz 8, HW 24a due
13	M 4/13	Radicals	25b: 25.5-25.6		HW 24b due
	W 4/15		25c: 25.7-25.8		HW 25a due
	F 4/17	Polymers	26a: 26.1 – 26.4		Quiz 9, HW 25bc due
14	M 4/20	Polymers	26b: 26.5 - 26.9		HW 26 due
	W 4/22		EXAM IV: Ch 24-26		
	F 4/24		FINAL REVIEW		In-class xc opportunity
15	M 4/27		FINAL REVIEW		HW xc due (rev.)
	W 4/29		**ACS COMPREHENSIVE FINAL** 1-3 PM		