



CHEM F321

Organic Chemistry I

Fall 2015

CRN(s): 74020, 74021, 74022, 74023, 74024, or 74025; 4 credits

Lecture: MURIE Auditorium, MWF 1-2 pm

Lab: REIC 241, Various Times.

Prerequisite: Chem F106X with grade of C or better.

Instructor: Jennifer Guerard, Ph.D.

Office: REIC 180

Office Hours: Thurs 9-11 am and by appointment

Phone: (907) 474-5231

Email: jguerard@alaska.edu

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 Materials

Required:

- **Textbook: Wade Jr., L.G. *Organic Chemistry*. 8th ed., Pearson, 2013
- Workbook: Klein, D. *Organic Chemistry as a Second Language: First Semester Topics*, 3rd ed. Wiley, 2012
- Online Homework: Subscription to Sapling Learning: www.saplinglearning.com
- Equipment: **NON-programmable, NON-graphing** scientific calculator
- Turning Technologies clicker or ResponseWare mobile app

Recommended:

- **Wade Jr., L.G. and Simek, Jan William. *Solutions Manual for Organic Chemistry*. Pearson, 2013
- Eubanks, I. Dwaine. *Preparing for Your ACS Examination in Organic Chemistry: The Official Guide*
- Prentice Hall Molecular Model Set for Organic Chemistry (or other molecular modeling kit)

**On reserve in the Rasmuson Library for 2hr/overnight checkout.

Important Dates

Sept. 4 th :	First day of class
Sept. 11 th :	Deadline for adding classes, late registration, fee payment
Sept. 18 th :	Last day for 100% refund, last day to drop with no academic record
Sept. 25 th :	EXAM I (Ch 1-4)
Oct. 19 th :	EXAM II (Ch 5-6)
Oct. 30 th :	Last day to drop with a W or Faculty initiated withdrawals.
Nov. 11 th :	EXAM III (Ch 7-9)
Dec. 4 th :	EXAM IV (Ch 10, 11, 14)
Dec. 14 th :	Last day of instruction
Dec. 16 th :	FINAL EXAM (Ch 1-15), 1-3pm
Dec. 23 rd :	Grades Posted

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

Student Learning Outcomes

At the end of this course, students should be to:

1. Identify and draw common organic functional groups.
2. Name hydrocarbons, including alkanes, alkenes, alkynes, dienes and alcohols.
3. Apply conformational analysis of cyclohexane and associated derivatives.
4. Predict the reactivity of alkanes, alkenes, alkynes, dienes, and alcohols.
5. Know common reagents used for hydrocarbon transformation into other functional groups.
6. Interpret IR, NMR spectra of simple organic compounds to arrive at a structure.
7. Draw and interpret 3D structures of stereoisomers.
8. Predict and write mechanisms of reactions of hydrocarbons based on fundamental concepts of acid/base chemistry (nucleophiles and electrophiles).

Course Structure: The coursework will follow the textbook in the order described on the Tentative Lecture Schedule. The instructor will lecture on the theoretical aspects of organic chemistry, using a combination of slides and whiteboard, providing copies of notes to the students via Blackboard. Clickers will be used in class to assess student understanding of concepts.

Evaluation and Grade Assignment

Point Breakdown:

Sapling Learning HW: (13 assignments @ 12 points each)	156 points
In class quizzes/clickers	44 points
EXAM I (Sept 25, 2015):	100 points
EXAM II (Oct 19, 2015):	100 points
EXAM III (Nov 11, 2015):	100 points
EXAM IV (Dec 4, 2015):	100 points
Comprehensive Final:	150 points
<hr/>	
Total Lecture Points:	750 points
Total Lab Points:	250 points
<hr/>	
Total Course Points:	1000 points

Grading:

A =	≥ 90%	(≥ 900 points)
B =	80 – 89%	(800 – 899 points)
C =	70 – 79%	(700 – 799 points)
D =	60 – 69%	(600 – 699 points)
F =	< 60%	(< 600 points)

I may elect to lower the grade point cutoffs, but will not raise them. I will not be using +/- grading.

Notes and Policies

Homework - Sapling Learning. To create an account, go to <http://saplinglearning.com> and click on your country at the top right, and create an account. Once logged in, find this course in the list (you may need to expand the subject and term categories) and click the link. Follow the instructions for payment and access. **The first assignment is due MONDAY, Sept 14th, 11:55 PM.** It is advised to register *before* then in order to allow sufficient time to complete the first assignment. Expect homework assignments to take *at least* a few hours each week. **Late assignments are not accepted.** Homework assignments are listed in the syllabus and are due at 11:55 pm on dates shown.

Turning Technologies Clickers. It is the student's responsibility to bring the clicker to each class, replace if lost, verify it is registered correctly on the instructor's database, and keep it supplied with fresh batteries. The "LCD" handheld version or the smartphone application give feedback that the student's response was registered, but **it is ultimately the student's responsibility** to address problems with their clicker and/or check with the instructor concerning their clicks. **Clicker IDs must be registered through Blackboard (<http://classes.uaf.edu>) by THURSDAY, Sept 10th, 11:59 PM.** To register your clicker on the course Blackboard site, click Tools on the left panel, then Turning Technologies. Total clicker scores

will be communicated regularly via Blackboard. Clicker scores are based on participation. The total number of clicker opportunities will be normalized to 55 points, of which only 44 will be counted, to provide a cushion in case of illness or other reasons for missed class. A maximum of 44 points will be applied to a student's grade.

Exams. No electronic devices are allowed during exams other than a non-programmable scientific calculator. You must turn in your exam before leaving the room. Use of molecular models are allowed and encouraged during all exams. *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 as per the policy of the Chemistry Department (see Honor code).* **Make-up exams** are only allowed in the event of a legitimate excuse as determined by the instructor. If you anticipate an absence from an exam, bring it to my attention *before* the exam date, or in the case of unexpected absences, within one business day.

Mobile Devices. Mobile devices must be turned to silent or "vibrate" mode during class. Mobile devices are not allowed during exams.

Honor Code. Chemistry Department policy states that any student caught cheating on graded work will be assigned a course grade of F. Course drop forms will not be signed in these cases.

Instructor-Initiated Withdrawals. Until **Friday, October 30th**, the instructor has the right to withdraw a student who has not participated substantially in the course. Any of the following constitute non-participation:

- Exam I or II missed without an excused absence, or
- At least 2 incomplete homework assignments, or
- Less than 50% of clicker questions registered without excused absence(s)

Support & Accommodations

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. Students with documented disabilities who may need reasonable academic accommodations should discuss these with me during the first two weeks of class. I will work with the Office of Disabilities Services (*208 Whitaker, 474-5655) to provide reasonable accommodation to students with disabilities. You will need to provide documentation of your disability to Disability Services.

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.

Student Support Services. The Student Support Services (SSS) program 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 program.

Amending this Syllabus: *Before the drop date, I may slightly 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. Any revisions will be distributed to all students via Blackboard and announced in class. Adjustments to the tentative lecture schedule, homework due dates and readings will be made throughout the course at the instructor's discretion and if so, communicated to students via Blackboard.*

Tentative Lecture Schedule

	Date	Lecture Topic	Wade Reading	Klein Workbook	Assignments
WEEK 1	F 9/4	Ch 1: Intro & Gen Chem Review	Ch 1	Ch 1-2	HW1 open
	W 9/9	Ch 2: Orbitals, hybridization	Ch 2.1 – 2.11	Ch 4	
	F 9/11	Ch 2: Acid-Base Chemistry	Ch 2.12 – 2.14	Ch 3	
WEEK 2	M 9/14	Ch 3: Alkanes	Ch 3.1 – 3.9	Ch 5, 6.1-6.2	HW1 due , HW2 open
	W 9/16	Ch 3: Alkanes Cont. - cyclohexane	Ch 3.10 – 3.16	6.3-6.6	
	F 9/18	Ch 4: Free radical chain reactions	Ch 4.1 – 4.7		HW3 open
WEEK 3	M 9/21	Ch 4: Free radical chain reactions	Ch 4.8 – 4.16		HW2 Due
	W 9/23	Exam 1 Review			HW3 Due
	F 9/25	EXAM I (Ch 1-4)			
WEEK 4	M 9/28	Ch 5: Stereochemistry	Ch 5.1 – 5.9	7.1-7.4	HW4 open
	W 9/30	Ch 5: Stereochemistry, cont.	Ch 5.10 – 5.16	7.5-7.8	
	F 10/2	Ch 6: Alkyl halides – S _N 2	Ch 6.1 – 6.12	Ch 8	HW5 open
WEEK 5	M 10/5	IR SPECTROSCOPY - Dr. Green	Ch 13.1 – 13.5		HW4 Due
	W 10/7	Ch 6: S _N 1 Reactions	Ch 6.13 – 6.16	Ch 9	
	F 10/9	Ch 6: E1 Reactions	Ch 6.17 – 6.18	10.1-10.6	HW5 Due , HW6 open
WEEK 6	M 10/12	NMR SPECTROSCOPY – Dr. Green	Ch 12		
	W 10/14	Ch 6: E2 Reactions	Ch 6.19 – 6.21	10.7-10.10	
	F 10/16	Exam 2 Review			HW6 Due
WEEK 7	M 10/19	EXAM II (Ch 5-6)			
	W 10/21	Elementary Reaction Mechanisms	Supplemental	1.4	
	F 10/23	Ch 7: Alkenes - properties	Ch 7.1-7.8		HW7 open
WEEK 8	M 10/26	Ch 7: Alkene synthesis	Ch 7.9-7.11		
	W 10/28	Ch 8: Alkenes reactions	Ch 8.1-8.3	11.1-11.5	HW8 open
	F 10/30	Ch 8: Alkene reactions cont.	Ch 8.4-8.10	11.6-11.11	HW7 Due
WEEK 9	M 11/2	Ch 8: Alkenes reactions cont.	Ch 8.11-8.17	11.12	HW8 Due
	W 11/4	Ch 9: Alkynes – synthesis	Ch 9.1-9.8		HW9 open
	F 11/6	Ch 9: Alkynes – reactions	Ch 9.9-9.10		
WEEK 10	M 11/9	Exam 3 Review			HW9 Due
	W 11/11	EXAM III (Ch 7-9)			
	F 11/13	Ch 10: Alcohols – Grignard	Ch 10.1-10.10	12.1-3, 12.6	HW10 open
WEEK 11	M 11/16	Ch 10: Alcohols – synthesis cont.	Ch 10.11-10.12	12.4, 12.5, 12.7	
	W 11/18	Ch 11: Alcohols – reactions	Ch 11.1 – 11.4	12.9	HW11 open
	F 11/20	Ch 11: Alcohols – reactions cont.	Ch 11.5 – 11.9	12.8	HW10 Due
WEEK 12	M 11/23	Ch 11: Alcohols – reactions cont.	Ch 11.10 – 11.14		
	W 11/25	Ch 14: Ethers	Ch 14.1 -14.7	12.10	HW11 Due , HW12 open
WEEK 13	M 11/30	Ch 14: Epoxides	Ch 14.11 – 14.16		
	W 12/2	Exam 4 Review			HW 12 Due
	F 12/4	EXAM IV (Ch 10, 11, 14)			
WEEK 14	M 12/7	Ch 15: Conjugated Systems	Ch 15.1 – 15.10		HW 13 open
	W 12/9	Ch 15: Diels-Alder	Ch 15.11 – 15.15		
	F 12/11	Final Exam Review			
WEEK 15	M 12/14	Final Exam Review			HW13 Due
	W 12/16	COMPREHENSIVE FINAL EXAM (CH 1-15) 2 HOURS, 1-3 pm			