

CRN(s): 74756; 74757; 74758; 74759; 74760; 74761; 4 credits

Lecture: REIC 201, MWF 8:00-9:00 AM

Prerequisite: Chem F106X with grade of C or better.

Lecture Instructor: Jennifer Guerard, Ph.D.

Office: REIC 180

Phone: (907) 474-5231

Lab: REIC 241, Various Times

Lab Instructor: Thomas Green, Ph.D.

Office Hours: Wednesday 9-11 am

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 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. The coursework will follow topics in the order described on the Tentative Lecture Schedule. The instructor will lecture using a combination of slides and 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:

- **Textbook package sold via UAF Bookstore, includes:**

- Joel Karty *Organic Chemistry: Principles and Mechanisms*. Norton, 2014
- Online Homework: Subscription to Smartwork (included with all textbook pkgs)
- **NON-programmable, NON-graphing scientific calculator**
- **Turning Technologies license AND device** (either hand-held clicker or mobile device with Responseware)

- Recommended:**
- **Workbook:** Klein, D. *Organic Chemistry as a Second Language: First Semester Topics*, 3rd ed. Wiley, 2012
 - Eubanks, I. Dwaine. *Preparing for Your ACS Examination in Organic Chemistry: The Official Guide*
 - Molecular model kit

Important Dates.

Aug. 28th: First day of class

Sept. 8th: Deadline for adding classes, late registration, faculty-initiated drops.
Last day to drop with no appearance on academic record

Sept. 20th: EXAM I (Ch 1-4, N1,2,4)

Oct. 11th: EXAM II (Ch 5-7, IR)

Nov. 6th: EXAM III (Ch 8-10, IC1)

Nov. 3rd: Last day to withdraw or faculty-initiated withdrawal with W

Dec 1st: EXAM IV (Ch 11-13, NMR)

Dec. 10th: Last day of instruction

Dec. 11th: FINAL 8-10 am (Ch 1-16)

Dec. 20th: Grades Posted

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).

Evaluation and Grade Assignment.

Smartwork HW:	100 points
In class quizzes	100 points
In class activities/clickers	50 points
EXAM I (Sept 20, 2017):	100 points
EXAM II (Oct 11, 2017):	100 points
EXAM III (Nov 6, 2017):	100 points
EXAM IV (Dec 1, 2017):	100 points
Comprehensive Final:	100 points
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Total Lecture Points:	750 points
Total Lab Points:	250 points
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Total Course Points:	1000 points

Grading:

A =	900 – 1000 points
B =	800 – 899 points
C =	700 – 799 points
D =	600 – 699 points
F =	0 – 599 points

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

Notes and Policies.

Smartwork homework. Instructions are on Blackboard under Course Materials for Smartwork registration. You will need: 1) Your UAF email. 2) Course enrollment key (on Blackboard) and 3) Registration code from W. W. Norton (included with purchased textbook packages). **The first assignment is due on WEDNESDAY, Sept 6th at 8:00 AM.** Expect homework assignments to take *at least* a few hours each week. **Late assignments are not accepted.** Homework assignments are open for an entire week and thus it is important to plan accordingly in order to finish the homework by the due date. Due dates are listed in the syllabus and are due at 8:00 AM on dates shown.

Class Participation. Several in-class activities require individual responses using **Turning Technologies Clickers. It is thus important to attend and bring your clicker to class every day, and in the case of absence, inform the instructor as soon as it is known, or if unexpected, within one business day.** Total points earned from clickers will be normalized to 60 points, out of which only 50 will be counted, to provide a cushion in case of illness or other reasons for missed class. A maximum of 50 points will be applied to a student's grade (see point breakdown). Point opportunities may vary from day to day. It is the student's responsibility to bring the clicker/responseware-installed-device to each class, replace if lost, verify it is registered correctly on the instructor's database, and keep it supplied with fresh batteries. **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 SUNDAY, Sept 10th, 11:59 PM.** Directions for registering clickers are posted to

Blackboard. **Note: A purchased license with Turning is REQUIRED** in order to be able to see your responses and properly attribute points, *even if* you using an older clicker.

Exams. No electronic devices are allowed during exams other than a non-programmable scientific calculator. Note - you must know how to use your own calculator, I cannot help you with your calculator during exams. You must turn in your exam before leaving the room. Molecular model kits are allowed 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.*

Quizzes. 11 quizzes will be given out over the term, each worth 10 points (see syllabus schedule). The lowest score will be dropped. Quizzes will be 15 minutes long, 5 questions each.

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.

Make-up exams or quizzes 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 and Laptops. Mobile devices must be turned to silent or “vibrate” mode during class. Use of electronic devices that facilitate learning are permitted. Any other use is prohibited.

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

Support & Accommodations.

Chemistry Learning Center (CLC) – CHEM 321 TAs keep regular office hours, which can be found on the CLC calendar: <https://www.uaf.edu/chem/clc/>. Chemistry computer lab (REIC 170, 172) is available for **course related activities** - See <http://www.uaf.edu/chem/instrumentation/policies>.

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 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.*

	Date	Assigned Readings	Klein	Assignments
Week 1	M 8/28	Ch 1: Gen Chem Review	Ch 1-2	HW 1 open (Ch 1-3)
	W 8/30	Ch 2: Gen Chem Review		
	F 9/1	Ch 3: Orbital Hybridization	Ch 4	Quiz 1
Week 2	W 9/6	Ch N1, N2.1: Nomenclature	Ch 5	HW 1 due , HW xc1 open (Ch N)
	F 9/8	Ch N4: Nomenclature		Quiz 2
Week 3	M 9/11	Ch 4.1-4.5: Conformations		Clicker red due , HW 2 open (Ch4)
	W 9/13	Ch 4.6-4.10: Conformations	Ch 6	
	F 9/15	Ch 4.11-4.16: Isomers		Quiz 3, HW xc1 due
Week 4	M 9/18	Exam 1 Review		HW 2 due
	W 9/20	EXAM 1 (Ch 1-4, N1, N2, N4)		
	F 9/22	Ch 5.1-5.4, N3: Chirality		HW 3 open (Ch 5)
Week 5	M 9/25	Ch 5.5-5.7, 5.13-5.15: Chirality	Ch 7	
	W 9/27	Ch 5.8-5.12: Chirality		
	F 9/29	Ch 6.1-6.3, 6.10-6.11: Acidity		Quiz 4 , HW 4 open (Ch 6)
Week 6	M 10/2	Ch 6.4-6.9: Acidity	Ch 3	HW 3 due
	W 10/4	Ch 7: Elementary Reaction Steps	Ch 8	Quiz 5 , HW 5 open (Ch 7)
	F 10/6	<i>Ch 15.4-15.6 – IR Spectroscopy – Dr. Green</i>		HW 4 due , HW xc2 open (Ch 15)
Week 7	M 10/9	Exam 2 Review		
	W 10/11	EXAM 2 (Ch 5-7, IR)		HW 5 due
	F 10/13	Ch IC1, Ch 8.1-8.4: SN1, E1	Ch 9,10	HW 6 open (Ch 8-9)
Week 8	M 10/16	Ch 8.5-8.7: SN1, E1		HW xc2 due
	W 10/18	Ch 9.1-9.9: SN1, SN2, E1, E2		
	F 10/20	Ch 9.10-9.14: SN1, SN2, E1, E2		Quiz 6
Week 9	M 10/23	<i>SN1, SN2, E1, E2 Review</i>		HW 6 due
	W 10/25	Ch 10.1-10.4: SN1, SN2, E1, E2	Ch 12	HW 7 open (Ch 10)
	F 10/27	Ch 10.5-10.7: SN1, SN2, E1, E2		Quiz 7
Week 10	M 10/30	Ch 10.8-10.10: SN1, SN2, E1, E2		
	W 11/1	<i>Ch 16.1-16.15 – NMR– Dr. Green</i>		HW 7 due , HW xc3 open (Ch 16)
	F 11/3	Exam 3 Review		Quiz 8
Week 11	M 11/6	EXAM 3 (Ch 8-10, IC1)		
	W 11/8	Ch 11.1-11.5: Electrophilic Add.	Ch 11	HW 8 open (Ch 11-12)
	F 11/10	Ch 11.6-11.8: Electrophilic Add.		HW xc3 due
Week 12	M 11/13	Ch 11.9-11.12: Electrophilic Add.		
	W 11/15	Ch 12.1 – 12.3: Electrophilic Add.		Quiz 9
	F 11/17	Ch 12.4-12.5: Electrophilic Add.		
Week 13	M 11/20	Ch 12.6-12.8: Electrophilic Add.		
	W 11/22	Ch 13.1-13.3: Organic Synthesis	Ch 13	Quiz 10, HW 8 due , HW 9 open
Week 14	M 11/27	Ch 13.4-13.8: Organic Synthesis		
	W 11/29	Exam 4 Review		HW 9 due
	F 12/1	EXAM 4 (Ch 11-13, NMR)		
Week 15	M 12/4	Ch 14, N2.2: Aromaticity		HW 10 open (Ch 14)
	W 12/6	Ch 15.1-15.3: Absorbance		
	F 12/8	Final Exam Review		Quiz 11, HW 10 due
	M 12/11	COMPREHENSIVE FINAL (Ch 1-16) 8-10 AM		