CHEM F321
Organic Chemistry I
Fall 2016

CRN(s): 73624; 73625; 73626; 73627; 73628; 73629; 4 credits
Lecture: REIC 201, TR 945-1115 AM
Prerequisite: Chem F106X with grade of C or better.

Lab: REIC 241, Various Times
Lab Instructor: Thomas Green, Ph.D.

Lecture Instructor: Jennifer Guerard, Ph.D.
Office: REIC 180
Phone: (907) 474-5231

Office Hours: TBD (updated soon!)
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 package sold via UAF Bookstore, includes**:
  - Joel Karty *Organic Chemistry: Principles and Mechanisms*. Norton, 2014
    - Hardcover + solutions manual + ebook option
    - Looseleaf + solutions manual + ebook option
    - Ebook only option
  - Online Homework: Subscription to Smartwork (included with all textbook pkgs)
- **Equipment: 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. 29th: First day of class
Sept. 9th: Deadline for adding classes, late registration, fee payment. 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)
Nov. 1st: EXAM III (Ch 8-10)
Nov. 4th: Last day to drop with a W or Faculty initiated withdrawals.
Nov 29th: EXAM IV (Ch 11-13)
Dec. 10th: Last day of instruction
Dec. 15th: FINAL 10:15am – 12:15pm (Ch 1-16)
Dec. 21st: Grades Posted

Course Goals

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, homework, in-class activities, and exams will assess student understanding of concepts. Laboratory schedule/expectations will be handed out during lab.

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

Point Breakdown:

Smartwork HW:	120 points
(12 assignments @ 10 points each)	
In class quizzes/clickers	80 points
EXAM 1 (Sept 20, 2016):	100 points
EXAM II (Oct 11, 2016):	100 points
EXAM III (Nov 1, 2016):	100 points
EXAM IV (Nov 29, 2016):	100 points
Comprehensive Final:	150 points
Total Lecture Points:	750 points
Total Lab Points:	250 points
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 - Smartwork. Follow the instructions on Blackboard under Course Materials for registration with Smartwork. You will need: 1) Your uaf email address. 2) The enrollment key for the course (see Blackboard course materials) and 3) A registration code from W. W. Norton (comes with textbook packages purchased at the bookstore). **The first assignment is due by the start of class on TUESDAY, Sept 6th (9:45 AM).** 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 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 9:45AM (the start of class) on dates shown.

Class Participation: Several class periods will contain individual or group problem activities that are to be turned in during the class period. Some in-class activities will be done on paper as in-class problem sets or quizzes. Several in-class activities will 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 absences, to inform the instructor as soon as it is known, or if an unexpected absence, within one business day*. Total points earned from clickers and in-class activities will be normalized to 100 points,

out of which only 80 will be counted, to provide a cushion in case of illness or other reasons for missed class. A maximum of 80 points will be applied to a student's grade (see point breakdown). Point opportunities for class participation may vary from day to day.

Turning Technologies Clickers. 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 MONDAY, Sept 12th, 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 as per the policy of the Chemistry Department.* **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.

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.

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. Mobile devices and laptops are not allowed during exams.

Instructor-Initiated Withdrawals. Until **Friday, Nov. 4th**, 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 without an excused absence, 2) At least 2 incomplete homeworks, or 3) Less than 50% of participation points registered 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.*

Tentative Lecture Schedule

	Date		Lecture Topic/Readings	Klein Wkbk	Smartwork HW
WEEK 1	T	8/30	Ch 1-2: Intro, Gen Chem Review	Ch 1-2	HW 1 open (Ch 1-2)
	R	9/1	Ch 3: Orbitals, hybridization	Ch 4	HW 2 open (Ch 3)
WEEK 2	T	9/6	N1-2: Nomenclature	Ch 5	**HW 1 due**, HW xc1 open (Ch N)
	R	9/8	IR SPECTROSCOPY - Dr. Green		**HW 2 due,** HW xc2 open (Ch 15)
WEEK 3	T	9/13	Ch 4: Conformational Isomers	Ch 6	**HW xc1 due** HW 3 open (Ch 4)
	R	9/15	N4: Functional Group Nomenclature		**HW xc2 due**
WEEK 4	**T**	**9/20**	**EXAM I (Ch 1-4, N1-4)**		HW 3 due
	R	9/22	Ch 5: Chirality	Ch 7	HW 4 open (Ch 5)
WEEK 5	T	9/27	Ch 5: Chirality		
	R	9/29	Ch 6: Proton Transfer	Ch 3	**HW 4 due** HW 5 open (Ch 6)
WEEK 6	T	10/4	Ch 6: Proton Transfer, Thermo		
	R	10/6	Ch 7: Elementary Steps	Ch 8	**HW 5 due** HW 6 open (Ch 7)
WEEK 7	**T**	**10/11**	**EXAM II (Ch 5-7, I1)**	Ch 9, 10	**HW 6 due**
	R	10/13	Ch 8: SN1, E1		HW 7 open (Ch 8-9)
WEEK 8	T	10/18	Ch 9: SN2, E2	Ch 9, 10	
	R	10/20	Ch 9: SN2, E2		
WEEK 9	T	10/25	Ch 10: SN1, SN2, E1, E2.	Ch 12	**HW 7 due** HW 8 open (Ch 10)
	R	10/27	Ch 10: SN1, SN2, E1, E2		
WEEK 10	**T**	**11/1**	**EXAM III (Ch 8-10)**		**HW 8 due**
	R	11/3	NMR SPECTROSCOPY – Dr. Green		HW xc3 open (Ch 16)
WEEK 11	T	11/8	Ch 11: Electrophilic Addition	Ch 11	HW 9 open (Ch 11)
	R	11/10	Ch 11: Electrophilic Addition		**HW xc3 due**
WEEK 12	T	11/15	Ch 12: Electrophilic Addition		**HW 9 due** HW 10 open (Ch 12)
	R	11/17	Ch 12: Electrophilic Addition		
WEEK 13	T	11/22	Ch 13: Organic Synthesis	Ch 13	**HW 10 due** HW 11 open (Ch 13)
	R	11/24	*NO CLASS: THANKSGIVING*		
WEEK 14	**T**	**11/29**	**EXAM IV (Ch 11-13)**		**HW 11 due**
	R	12/1	Ch 14: Extended pi systems		HW 12 open (Ch 14)
WEEK 15	T	12/6	Ch 14: Aromaticity		
	R	12/8	Review		**HW 12 due**
FINAL	**R**	**12/15**	**COMPREHENSIVE FINAL EXAM 2 HOURS, 10:15am – 12:15pm**		