CHEMISTRY 4372       Advanced Organic Chemistry         Fall 2016

Time:        MWF 9:30 - 10:20 am; W228 CB

Instructor:  Professor Hien Nguyen (hien-nguyen@uiowa.edu)
Office:      E433 Chemistry Building
Phone:       319-384-1887
Office Hours: Monday and Friday 1:00 - 2:30 pm or by appointment

Grader:      Stuart Schindler (email: stuart-schindler@uiowa.edu)

Textbooks:   Molecular Model Set (Required)
Undergraduate Organic Chemistry Textbook (Highly Recommended)

Exams:
TAKE-HOME EXAM I   (Tentative Date: 10/10/2016)
TAKE-HOME EXAM II  (Tentative Date: 11/14/2016)
TAKE-HOME EXAM III (Tentative Date: 12/12/2016)

Grading:      Unannounced Quizzes    100
               Problem Sets            200
               Seminars                100
               Exam I                  100
               Exam II                 100
               Exam III                100

Exam: If you know that you will miss an exam, please inform me at least two weeks in advance and provide the appropriate written documentation. I will then rearrange the time that will fit into your schedule. All exams are cumulative and will be take-home exams.

Quizzes: There will be unannounced quizzes at the start of the lecture over the course of the semester, but only the highest five quizzes will be counted in your final grade. There will be no make-up quizzes.

Homework: There will be about eight problem sets throughout the course of the semester. I will, however, only collect four to grade. Although you are allowed to work together with your classmates, you are not allowed to copy point-to-point of other’s problem sets.

Seminars: In order to receive credit for seminars, you MUST attend six seminars given by the invited speakers in the following departments or divisions:
       A) Chemistry Colloquium: Friday at 3:30 pm in W128 CB
       B) Organic Division Seminar: Thursday at 12:30 pm in C131 PC
       C) Inorganic Division Seminar: Wednesday at 12:30 pm in W268 CB
       D) Analytical Division Seminar: Thursday at 12:30 pm in C29 PC
E) Physical Division Seminar: Monday at 12:30 pm in 104 IATL
F) Division of Medicinal Chemistry and Natural Products, College of Pharmacy
   Tuesday at 4:00 pm in S538 PHAR (Pharmacy Building)
G) In addition to above seminars, you can attend seminars in other departments
   such as Biochemistry, Biology, Pharmacology, Microbiology, Physiology, and
   etc.
   After the seminar, you must write a half-page abstract and then electronically send
   it to my email. In your abstract, you must include the name of the speaker, his/her
   seminar title, and a brief summary of his/her research presentation. The abstract is
   due within a week after you attend the seminar. I WILL NOT accept any abstracts
   after one week of the seminar.

Course Administration: A majority of course business can be achieved at the Chemistry
Center, E225 CB. The hours are 8 AM -12 Noon & 12:30 – 4:30 PM on M-F, and the
contact person is Ms. Ellie Keuter (335-1341). The following issues SHOULD be achieved
at the Chemistry Center: drop/add forms, section changes, and TA office hours.

Complaints: complaints and appeals can be filed at the Department of Chemistry offices
located in E331 CB (335-1350).

Tentative Schedule:
   Reading materials for this course – Handouts are posted on ICON

1. STEREOCHEMISTRY RELATIONSHIP

2. NEIGHBORING GROUP PARTICIPATION AND BALWIN RULES
   Inter- and intramolecular $S_N1$ and $S_N1$ reactions
   Neighboring group participation and Baldwin’s rule for intramolecular ring closure

3. ELIMINATION REACTIONS
   Conformational analysis of acyclic $sp^3$-$sp^3$ system and $sp^2$-$sp^3$ system
   E1, E2, and E1cb reactions
   Stereoselective and stereospecific reactions

4. ALDOL REACTIONS

5. STRUCTURE AND CHEMISTRY OF CARBOHYDRATES
   Conformational analysis of cyclic systems
   Structure and Reactions of Carbohydrates (Carbohydrate Part I and Part II)
   Glycosidic Bond Formation
   Glycobiology

6. STRUCTURE AND CHEMISTRY OF AMINO ACIDS AND PROTEIN
Allylic strain and amide conformation
Protein Structure: amino acids and their conformation, protein folding
Polypeptide Synthesis: amide bond, protecting groups, and solid phase synthesis

7. PERICYCLIC REACTIONS

College Statement

Administrative Home: The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Questions may be addressed to 120 Schaeffer Hall or see the CLAS Student Academic Handbook [www.clas.uiowa.edu/students/academic_handbook/index.shtml].

Electronic Communication: University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check this account frequently. (Operations Manual, III.15.2. Scroll down to k.11.)

Academic Fraud: Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Student Academic Handbook.

Making a Suggestion or a Complaint: Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

Accommodations for Disabilities: A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make arrangements. See www.uiowa.edu/~sds/ for more information.

Understanding Sexual Harassment: Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the University Comprehensive Guide on Sexual Harassment at www.uiowa.edu/~eod/policies/sexual-harassment-guide/index.html for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather: In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. (Operations Manual, IV.16.14. Scroll down to e. h. and i.)