**Syllabus Chem 28A Organic Chemistry #56078**

**V. Cornel**

**Reedley College, Fall 2015**

Lecture: MWF 8:00am-8:50am in Room PHY 76

Office hours: PHY78 MWF 10-11

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**Course objectives:**

This is the first semester in a year-long course in organic chemistry designed for students majoring in chemistry and related disciplines, such as premedical, prepharmacy, predental, biology, biochemistry or chemical engineering. We will build on the knowledge gained in Chem1A and 1B, which are pre-requisite courses. This course is a study of the structures, properties, nomenclature and reactions of organic compounds with emphasis on reaction mechanisms. The course is recommended for students whose major is chemistry, premedical, predental, prepharmacy, biology, biochemistry or chemical engineering. The following topics are included: stereochemistry, alkanes, alkenes, alkynes, alkyl halides, alcohols, amines, ethers, epoxides, kinetic and thermodynamic control of reactions, multistep syntheses, infrared spectroscopy, nuclear magnetic spectroscopy, and mass spectroscopy, introduction to aromatics and recognition of other functional groups like ketones, aldehydes and carboxylic acids. The students will develop a level of learning skills, vocabulary and critical thinking skills which will enable them to successfully transfer to four year institutions.This course is also helpful towards preparation for the MCAT and PCAT. The UC's accept this course as upper division, but the CSU's do not. The CSU's accept the course as a lower division course and prerequisite for Biochemistry, but you have to do other upper division chemistry classes if chemistry is your major.

**Textbooks**

Klein, Organic Chemistry, 2nd edition

**Course Prerequisite:** CHEM1B.

**Course Advisories:** ENGL 1A

**Lecture:**

In general, read the chapter sections ahead of the lecture. Print the fill-in notes for each chapter and bring to class. At the end of the fill-in notes for each chapter are the assigned homework questions. Do these to check your understanding of the chapter and to practice for the exams. I will provide the solutions and want to see your corrections to your homework in red pen. I will collect this homework at the end of each chapter to check for completeness. The more effort you put into reading the textbook, memorizing reaction mechanisms and doing the homework, the better you will do in the exams.

**Student Learning Outcomes:**

Upon completion of this course, students will be able to**:**

1. analyze the structural formula of an organic compound, recognize its functional groups and name it properly.
2. draw a structural formula given the systematical name of an organic compound.
3. recognize stereochemistry and describe the physical properties of chiral compounds.
4. complete the reactions of many aliphatic molecules and write the correct reaction mechanism.
5. analyze MS, IR and NMR spectra and determine the structure of an unknown compound.

**Grading**:

**Average of the 5 exams 80%. The final exam** **will count 20%** and will be mainly on the last chapters, but will include questions from the whole semester.

Typical break-off for grading: A> 90%; B 80-89%; C 70-79%; D 60-69%; F< 59%.

**Drop dates**:

To obtain a full refund you need to drop before Friday, August 28, 2015

To avoid a "W" if you drop the class on or before Friday September 4, 2015.

The final date to drop this class is Friday Oct 16, 2015. After that day a letter grade needs to be assigned and it will appear on your transcripts.

**Attendance and class rules**: In accordance with Community College policy attendance is mandatory. Students will need to sign the sign-in sheet within the first 10 minutes of class. If you miss the first day without contacting the instructor you will be dropped. After that if you miss a total of 25% of the lectures *without contacting the instructor* *and providing a credible written excuse*, you may be dropped.

* Use of i-phones, cell phones, arriving late, leaving early, stepping out of class, talking during class, disrupting class, sleeping during class, or doing other work is all considered disruptive behavior and you will be recorded as "absent" and may be asked to leave.
* If you have to miss an exam *and provide a credible, written excuse*, I will allow you to do a make-up exam.

**Cancelled Classes:** If for some reason a class is cancelled, an official yellow cancellation form will be posted on the door of the classroom. We will make every effort to inform the students via Blackboard, or on the Reedley College Website in a timely manner.

**Class Rules**:

* Fraudulent behavior during exams is graded with a (0) zero.
* Copying of homework, experimental data, and lab reports is considered fraudulent behavior for both the copier and the originator and points (10-100%) may be deducted from both the copier and the originator. DO NOT HAND IN IDENTICAL HOMEWORK.
* Homework is due at the beginning of the next lecture after we have finished a chapter. For each day homework is late a student will lose 2%, up to a maximum of 1 week late.
* No extra credit will be given. You need to work consistently from the beginning.
* Please turn your cell phones onto “silent buzzer” mode during lectures so as not to disturb the class. No cell phones or i-pods will be allowed during exams.

**Lecture Content**:

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| We will have to cover a chapter every week. You are supposed to read the chapters and do the assigned homework. Also, watching UC Irvine lectures, or Khan Academy video’s, can be very helpful to fully understand the material.  August 17, 19, 21: **Chapter 1:** . Review of General Chemistry: electrons, bonds, Lewis structures, formal charges, polar molecules, hybridization, molecular geometry, intermolecular forces and physical properties.  Aug 21 and 23: **Chapter 2:**  Molecular Representations: line-bond structures, functional groups, resonance, curved arrows, pi electrons.  August 25, 27, Sept 1, 2 : **Chapter 4:**  Alkanes, alkyl halides and Cycloalkanes: nomenclature, isomers, Newman projections, chair conformations, *cis-trans* stereoisomers, free-radical substitution  Sept 4: **Chapter 3:** Acids and Bases: Bronsted-Lowry acids and bases, Lewis acids and Bases  E. Stereochemistry: stereoisomers, S and R chiral carbons, enantiomers, diastereomers, meso compounds, Fischer projections  F. Nucleophilic substitution reactions, SN1and SN2 reactions  G. Alkenes: nomenclature and preparation, elimination reactions with !1 and E2 mechanisms, addition reactions, oxidative cleavage, multistep reactions.  H. Alkynes : nomenclature, preparation, reduction, addition reactions, ozonolysis, alkylation of terminal alkynes, multistep reactions.  I. Alcohols and Phenols: nomenclature, properties, preaparation, reactions, multistep reactions.  J. Ethers , Epoxides, Thiols and Sulfides: nomenclature, properties, preparation, reactions, multistep reactions  K. Analytical techniques: Mass spectroscopy, infrared spectroscopy and nuclear magnetic spectroscopy. |
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**Important***: If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.*

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| Date |  |
| **Friday, September 4** | **Last day to add a class (or to drop a class to avoid a W)** |
| Wednesday Sept 9 | Exam 1 |
| Monday Sept 28 | Exam 2 |
| **Friday, Oct 16** | **Last day to drop a course to receive a “W”** |
| Monday Oct 19 | Exam 3 |
| Monday, Nov 9 | Exam 4 |
| **Wednesday Nov 11** | **Veteran's Day. No classes** |
| Thurs-Fri Nov 26-27 | **Thanksgiving, No classes** |
| Wednesday, Dec 2 | Exam 5 |
| Wednesday Dec 16 | Exam 6 8:00-9:50am in PHY76 |