**Syllabus Chem 28B Organic Chemistry #52673**

**V. Cornel**

**Reedley College, Spring 2014**

Lecture: TTh 2:00pm-3:15 in Room PHY 77

Office hours: PHY78 MWF 9:30-10:30

e-mail: vmcornel3@verizon.net

**Lecture**

In general, read each chapter ahead of the lecture. Each lecture ends with a homework assignment for the next class meeting so that you can keep up with the material. A copy of the slides will be available on Blackboard for you to make your own notes from. Don't just print the slides - write the notes out for yourself. Keep a journal of reaction mechanisms. Draw a summary diagram of the overall reactions for each functional group and then detailed reaction mechanisms with the chapter and section for each. These journals will be checked during each exam, and if they are kept up to date 2% extra credit on your final exam will be awarded.

**Textbooks**

1. McMurry, Organic Chemistry with Biological Applications, 2nd edition

2. Traynham, Organic Nomenclature, 6th edition

**Course objectives:**

This is the second 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 Chem 28A, which is the pre-requisite course. It covers the study of several groups of compounds in organic chemistry including a review of aromatic compounds and benzene derivative (covered in CHEM28A), aldehydes, ketones, carboxylic acid derivatives, amines, carbohydrates, amino acids, nucleotides and lipids. Each group is analyzed in terms of their structure, physical properties, nomenclature, reactions and reaction mechanisms. Also included are the oxidation-reduction of organic functional groups and protecting groups in multistep syntheses. A thorough introduction to bio-molecules, such as carbohydrates, lipids, proteins, and DNA are an important part of this semester. 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.

**Student Learning Outcomes:**

1. Predict the products of reactions of aromatic compounds.

2. Draw the reaction mechanism of an electrophilic aromatic substitution.

3. Complete reactions involving the carbonyl functional group such as aldehydes, ketones and carboxylic acids.

4. Recognize bio-molecules such as carbohydrates, lipids, amino acids, proteins and nucleic acids.

5. Explain how DNA sequencing takes place and what its role is in the current developments in biochemistry.

**Grading**:

**Average of the 5 exams (4 exams and final cumulative exam) 85%**

**Average of the homework, worksheets 15%**

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

**Homework**: Homework will be assigned at the end of each lecture. It is crucial to your success that you attempt every homework problem, and read the text in McMurry. Homework will be collected at the beginning of the next lecture and selected problems graded. You will be graded mainly on effort and not on getting every answer correct. The homework will then be turned back to the following lecture, I will go over certain problems and answer keys will be available in the laboratory. Homework may be turned in late up until the start of the next lecture, but 10% will be deducted (even if you were absent!). Homework needs to be done individually and points will be deducted from both students if identical answers are turned in.

**Drop date**: The final date to drop this class is Friday March 14, 2014. After that day a letter grade needs to be assigned and it will appear on your transcripts. You will avoid a "W" when you drop the class before or on Friday January 31, 2014.

**Attendance and class rules**: In accordance with Community College policy attendance is mandatory. 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 and labs *without contacting the instructor* *and providing a credible written excuse*, you may be dropped.

Use of i-phones, cell phones, tardiness, 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 either set a make-up exam or count the final exam twice, once as a final exam and once as a make-up exam.

**Lecture topics**.

Each topic will require about two weeks. The topics studied represent the chapters in McMurry's text book. You are supposed to read the chapters ahead of time. Also, watching UC Irvine lectures, or Khan Academy video’s, can be very helpful to fully understand the material.

1. Aldehydes and Ketones: Nucleophilic Addition Reactions. Chapter 14

2. Carboxylic Acids and Nitriles. Chapter 15

3. Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution Reactions. Chapter 16

4. Carbonyl Alpha-Substitution and Condensation Reactions. Chapter 17

5. Amines and Heterocycles. Chapter 18

6. Biomolecules: Amino Acids, Peptides, and Proteins. Chapter 19

7. Biomolecules: Carbohydrates. Chapter 21

8. Biomolecules: Lipids and Their Metabolism. Chapter 23

9. Biomolecules: Nucleic Acids and Their Metabolism. Chapter 23

10. Review of Aromatics (covered in CHEM28A)

**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 |  |
| Thursday February 6 | Exam 1 |
| Thursday March 6 | Exam 2 |
| **Friday 3/14** | **Last day to drop a course to receive a “W”** |
| Thursday March 27 | Exam 3 |
| **April 14-18** | **Spring Recess.** |
| Thursday May 1 | Exam 4 |
| Tuesday May 20 | Final Lecture Exam 2:00-3:50 |