

Introduction to Organic and Biochemistry (CHEM2450)

Syllabus, CRNs: 26743, 26744, 28580

Spring 2019

Instructor

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Class Meeting Time

Lecture: MWF 9:00-10:50am Laney-Manion Hall 104

Labs:

WF 12:00 - 1:50pm Laney-Manion Hall 202 (CRN: 26743)

WF 12:00 - 1:50pm Laney-Manion Hall 206 (CRN: 26744)

TR 11:30am - 1:30pm Laney-Manion Hall 202 (CRN: 28580)

- This lab (CRN: 28580) will be taught by Dr. Melissa Kelley

Office Hours

MWF: 2:00 – 3:30pm

Appointments are also available.

Course Objective and Prerequisites

CHEM 2450 is the second of a two-part course designed for students interested in a health science profession. This course covers topics in organic and biochemistry as they relate to the health science profession. The objective of this course is to provide students with a general knowledge of biological chemistry and how it applies to the health science field. Students should leave this course with an understanding of basic chemical principles and how these principles apply to their daily lives. CHEM 2450 has a pre-requisite of a grade of C or better in CHEM 1402.

Course Materials

1. Text: Fundamentals of General, Organic, and Biological Chemistry, 8th Edition (2017), J. McMurry, D. Ballantine, C. Hoeger, V. Peterson. ISBN-13: 978-0-13-401518-7 ISBN-10: 0-13-401518-5
2. Lab Manuals and other class materials are available on google classroom
3. Approved (ANSI Z. 87) laboratory eye protection.
4. Scientific Calculator

How to be successful in this course

1. **Attend lecture.** Students who do not attend lecture will not be successful in this course. Many of the topics I cover will not be presented in the book. You are responsible for the material covered in class and the reading assignments. Attending class is highly recommended.
2. **Read the book.** The book is an excellent reference and provides example problems that will greatly aid you in preparation for exams. Reading the chapter before lecture will give you an idea of what we will be covering and will better prepare you for lecture. Some of the figures I show in class are from the text.
3. **Study time.** I recommend you devote between two and three hours per lecture study time. I recommend you identify two or three other classmates to study with, asking questions, and using the textbook questions as a guide.
4. **Chemistry requires practice.** Chemistry is a field that requires you to practice and think. Many of you have not had the opportunity to develop your critical thinking skills. To help develop these skills, you will need to practice and understand the problems that are presented in lecture and the problems

in the text. Chemistry is not a spectator sport and to be successful it requires hard work and lots of practice. *Working the problems in the book will greatly aid your understanding of the material.*

5. **Ask questions.** If you do not understand the concepts I have presented in lecture ask. Chemistry is a science in which one concept is built on another. If you do not understand a chemical concept, then it is not going to get easier as the semester progresses. Please do not be embarrassed, there is no such thing as a stupid question. Stupidity lies in not asking. Please feel free to stop me in lecture with a question or if you would prefer stop by my office during office hours and ask.

Grading

Grading Scale

| | | |
|---|--------------|------------------|
| 3 Exams at 100 points each | = 300 points | A: 90% |
| 1 Final Exam | = 200 points | B: 80% |
| 3 Problem Sets at 10 points each | = 30 points | C: 70% |
| 3 Quizzes at 10 points each | = 30 points | D: 60% |
| 10 Labs at 15 points each (12 labs – 2 drop labs) | = 150 points | F: 50% and below |
| <hr/> | | |
| Total points | = 710 points | |

Missed Exams and Quizzes

A missed quiz will not be made up. A missed exam will be made up at my discretion. If you miss an exam for a **valid and significant reason**, and you contact me either through email or phone **before** the scheduled exam, then we can discuss the possibilities of a make-up exam. If you contact me after the exam, no make-up will be given. I strongly suggest that you make every effort to attend exams and quizzes. Tardiness to an exam is discouraged.

Attendance and Class Participation Policy

Attendance will be taken. Poor class attendance will be taken into account in determination of final grade at the critical areas. You are advised to attend all lectures since material presented in class will supplement the text and be included in quizzes and exams. Students who miss class are responsible for the material presented in class and class announcements.

Laboratory Safety

Safety in the laboratory is of utmost importance. You and your classmates' safety depend on one another. Horseplay, pranks, and other inappropriate behavior will not be tolerated and will result in you being excused from the lab with zero points for that laboratory. Use common sense, many of the chemicals can be toxic, corrosive, flammable, and have generally ill effects. If you are unsure of a technique or a chemical, **ASK BEFORE USING IT!!**

Chemical safety glasses will be required in the laboratory. **Those students who do not have proper eye protection will not be allowed to complete that laboratory and receive zero points for that lab.**

Laboratory Reports

There are dry labs and wet labs in this course. A dry lab means that you are doing a worksheet during lab time to reinforce concepts learned in class. For a dry lab, the worksheet is due before you leave lab unless instructed otherwise. Wet labs are experiments using chemicals. For wet labs there are three parts that you will turn in: a pre-lab, a data sheet, and a post-lab. Pre-lab portions of the laboratory are required to be completed **prior to entering the laboratory**. **Any student not having the pre-lab completed will be given a zero for that laboratory.** The data sheets and post-labs are due at the end of the laboratory period. There are no make-up laboratories. Your lowest lab score will be dropped.

Problem Sets

Each problem set will be composed of three to five problems, one or two of each: easy, moderate difficulty, and challenging. These will be posted to google classroom.

Additionally, I will select relevant problems from each chapter and post the numbers to google classroom. It is to your benefit to work these suggested problems prior to exams. They will not be graded.

Class Disruptions

Cell phones should be on silent during lecture and laboratory. **Texting and social talking is not acceptable in this course.** We have a lot material to cover in a semester and social visiting clearly inhibits the learning process. It is a disruption to your classmates and shows a lack of respect for the class and the instructor. Those students engaged in social talking, texting and/or disruptive behavior will be asked to leave the lecture or laboratory.

Lecture Schedule

***This is a tentative schedule-all dates and contents are subject to change**

| Date | Topic | Chapter | Assignment |
|---------------|--------------------------------------|----------------|-------------------|
| Jan 11 | Introduction, Alkanes | 12 | |
| Jan 14 | “ Alkenes, Alkynes, and Aromatics | 13 | |
| Jan 16 | “ | “ | Quiz 1 |
| Jan 18 | O, S, and X- containing compounds | 14 | |
| Jan 21 | MLK Jr Day – No Class | | |
| Jan 23 | Exam 1 | | Exam 1 |
| Jan 25 | Amines | 16 | |
| Jan 28 | Aldehydes & Ketones | 15 | PS1 Due |
| Jan 30 | Carboxylic Acids and Derivatives | 17 | Quiz 2 |
| Feb 1 | “ Carbohydrates | 20 | |
| Feb 4 | Exam 2 | | Exam 2 |
| Feb 6 | Carbohydrates (cont.) | 20 | |
| Feb 8 | Lipids | 23 | |
| Feb 11 | Proteins | 18 | PS2 Due |
| Feb 13 | Enzymes | 19 | Quiz 3 |
| Feb 15 | Biochemical Energy | 21 | |
| Feb 18 | Exam 3 | | Exam 3 |
| Feb 20 | Carbohydrate Metabolism | 22 | Last day to drop |
| Feb 22 | Lipid Metabolism | 24 | PS3 Due |
| Feb 27 | FINAL EXAM | | FINAL EXAM |

Laboratory Schedule (CRNs 26743 and 26744)

| Date | Laboratory Experiment |
|------------|----------------------------------|
| Jan 11 (F) | No Lab |
| Jan 16 (W) | Safety, Alkane Lewis Structures |
| Jan 18 (F) | Alkane Isomers, Hydrogen Bonding |
| Jan 23 (W) | No Lab |
| Jan 25 (F) | Unsaturated Hydrocarbons* |
| Jan 30 (W) | Synthesis of Aspirin* |
| Feb 1 (F) | Organic Reactions |
| Feb 6 (W) | No Lab |
| Feb 8 (F) | Carbohydrate Lab |
| Feb 13 (W) | Protein structure/function |
| Feb 15 (F) | Enzyme lab |
| Feb 20 (W) | DNA Isolation* |
| Feb 22 (F) | Organic Scavenger Hunt |

Laboratory Schedule (CRN 28580)

| Date | Laboratory Experiment |
|------------|----------------------------------|
| Jan 10 (R) | No Lab |
| Jan 15 (T) | Safety, Alkane Lewis Structures |
| Jan 17 (R) | Alkane Isomers, Hydrogen Bonding |
| Jan 22 (T) | No Lab |
| Jan 24 (R) | Unsaturated Hydrocarbons* |
| Jan 29 (T) | Synthesis of Aspirin |
| Jan 31 (R) | Organic Reactions |
| Feb 5 (T) | No Lab |
| Feb 7 (R) | Carbohydrate Lab |
| Feb 12 (T) | Protein structure/function |
| Feb 14 (R) | Enzyme lab |
| Feb 19 (T) | DNA Isolation* |
| Feb 21 (R) | Organic Scavenger Hunt |

*These are wet labs. Your pre-lab must be complete **before** lab and you must wear proper lab attire, including safety glasses and long pants.

University Academic Policies

- Academic Integrity** The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the *Student Handbook*. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.
- Disabilities Statement** The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613.
- Building Emergency Plan** An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.
- Title IX Disclosure** If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity*
- Student Handbook Policies** You are encouraged to familiarize yourself with student policies described in the student handbook. In particular, carefully read and understand those policies pertaining to academic issues and sexual harassment.
- Course Evaluations** Evaluations are kept completely confidential. Your thoughtful feedback is highly valued and cannot negatively or positively affect your course grade. Over the years this information has changed and improved the instruction of this course. Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on the Monday of the thirteenth week of instruction through the end of finals week by logging in to myUCA and clicking on the Course Evaluations Task.

