



## Chemistry 331: Organic Chemistry I

The mission of Concord University is to provide quality, liberal arts based education, to foster scholarly and creative activities and to serve the regional community. (<http://www.concord.edu/academics/>)

### Course Information

Course: Chemistry 331: Organic Chemistry I

Section: 01

Credit Hours: 4 credits

Room: Science Hall 309

CRN: 20241

Semester Taught: Spring 2019

Time: TR 1:00-2:15

### Prerequisites

Grade of C or better in the following courses: CHEM 101, CHEM 111, CHEM 102, CHEM 112, MATH 103 and MATH 104 (or equivalent proficiency). You must register for both lecture (CHEM 331) and a lab section (CHEM 331L).

### Instructor Information

Professor: Dr. Darrell W. Crick, Associate Professor of Chemistry

Email: [dcrick@concord.edu](mailto:dcrick@concord.edu) (best way to reach Dr. Crick)

Office: Science Hall 401A

Office Hours: M 1:00-2:50, TR 11:00-1:00, W 10:00-11:00 and by appointment

Phone: 304-384-5169 Fax: 304-384-6225

Website: <http://www.concord.edu/physci/>

Note that providing assistance to a student often requires going to the laboratory. If I am not at my desk during office hours, please check 407, 408, and other nearby fourth floor labs. Any changes to office hours will be posted on my door and announced in class or by email/posting to Moodle as appropriate.

I strongly encourage students to visit my office hours and email with any questions related to the course. I am here to help you be successful.

### **Course Description/Rationale**

Introduction to the chemistry of carbon compounds. Laboratory consists of fundamental techniques and preparations.

### **Required Materials**

#### **Course Management System**

This course will use Moodle.

Course resources will be available at [moodle.concord.edu](http://moodle.concord.edu). The instructor will add students to the appropriate Moodle section.

#### **Hardware/Software Needed**

Access to a computer with a modern, standards-compliant browser (Safari and Chrome work best) and an internet connection will be required to access library resources, Moodle, and online homework assignments. Access to an office software suite will be required to complete some assignments. Microsoft Office (Word/Excel/PowerPoint/OneNote) is provided by Concord. The freely available packages iWork (Pages/Numbers/Keynote), LibreOffice, OpenOffice, and NeoOffice will perform equally well. Specialized software may be required in some instances and will be available on departmental computers for student use.

An optional text messaging service is available and students are encouraged to join. Phone numbers are kept private using this system. The instructor will provide instructions for joining the list.

#### **Required Text and Materials**

- Organic Chemistry, 8th edition by Paula Yurkanis Bruice
- Mastering Chemistry Access Code

#### **Recommended Text and Materials**

- Study Guide/Solutions Manual to accompany textbook
- Molecular Model Set

## Course Description

### Concord University Educational Goals

The course contains many components that address Concord University Educational Goals. Concord University Goal 2 Knowledge, Learning Outcome 2 will be formally assessed during the semester.

Knowledge: Familiarity with principles underlying academic discourse in various fields, as demonstrated by the following capabilities:

Learning Outcome 2: An awareness of the fundamental characteristics and properties of the physical universe.

### Department Mission

The Department of Physical Sciences challenges students to become interdisciplinary, ethically responsible professionals and scientists. Our degree programs and courses engage students with fundamental scientific content with the aim to transform them into leaders in their discipline and equip them to succeed in future careers and post-graduate studies. Our faculty foster a dynamic learning environment that broadens students' knowledge, skills, and attitudes through active-learning curricula. Our mission drives the [Educational Goals and Objectives](#) of our programs.

### National Standards

Not applicable, but the course has been designed with input from the recommendations of the American Chemical Society Committee on Professional Training. An American Chemical Society Standardized Exam will be given at the end of the course.

### Specific Learning Outcomes

As a result of taking Chemistry 331 and the accompanying laboratory, the student should:

- Know how to construct Lewis diagrams for organic molecules and be able to show electron flow in mechanisms using curved arrow notation
- Understand basic principles of molecular orbital control of structure and reactivity of compounds
- Be able to apply nomenclature rules to give systematic names to hydrocarbons, alkyl halides, alcohols, amines, and ethers.
- Understand basic stereochemical concepts and how they affect chemical properties
- Understand nucleophilic substitution, elimination and addition reactions and be able to apply them to synthesize simple organic compounds

- Understand the relationships between equilibria, thermodynamics, kinetics and reaction mechanisms
- Understand fundamental radical chemistry
- Understand the physical and chemical consequences of conjugation
- Be able to perform a wide variety of standard microscale organic chemistry laboratory procedures
- Be able to write a formal laboratory report in the format of a primary research article
- Be able to obtain reference data from appropriate sources
- Develop good safety and laboratory cleanliness habits

## Course Requirements

- Homework will consist of Mastering Chemistry online exercises, take home problem sets, and chapter summaries. Chapter summaries are due at the **beginning** of class.
- Exams: There will be three exams given on the dates listed below.
- Spectroscopy Exercises: Weekly online and written assignments designed to build knowledge of spectroscopic methods using to analyze organic molecules.
- Final Exam: A comprehensive, American Chemical Society standardized exam
- Laboratory Exercises: Details are given in the separate CHEM 331L syllabus.

## Exam Dates

Exam 1: Tuesday, February 19, 2019

Exam 2: Thursday, March 28, 2019

Exam 3: Thursday, April 25, 2019

Final Exam: Thursday, May 9, 2019 11:30-1:45 PM

## Grading Policy and Scale

The student's grade will be determined as follows:

- Homework: 20%
- Exams: 30%
- Spectroscopy: 10%

- Laboratory: 25%\*
- Final Exam: 15%

**Students having an average of less than 60% in CHEM 331L will receive an F in CHEM 331**

Scale A: 90-100% B: 80-89% C: 70-79% D: 60-69% F: <60%

### **Make-up Policy**

Regular attendance is essential for adequate performance and is required. Accommodations for documented university or medical excused absences will be made on a case-by-case basis. In situations where the student is aware of the absence in advance (athletic events, field trips, etc.), arrangements for completing required work either before or no later than seven (7) days after the absence must be made prior to the absence.

### **Late Assignments**

Assignments that are not submitted at the specified times will be considered late. There will be a 10% deduction for each day late for assignments other than online homework. Online homework will have a 2% deduction for each hour late. "Technological difficulties" such as last minute computer failure or inability to access the internet are not acceptable excuses.

**Course Timeline**

<b>Date</b>	<b>Topic</b>	<b>Text</b>
1/15	Orbitals, Bonding, MO Theory	1.1-1.8
1/17	Bonding in Simple Molecules, Hybridization, Shape, Polarity	1.9-1.16
1/22	Acid-Base Reactions and Factors that affect $pK_a$	2.1-2.7
1/24	Delocalization and Effects on $pK_a$	2.8-2.12
1/29	Alkanes and Alkane Nomenclature, Intro to $^{13}\text{C}$ NMR	3.1-3.3
1/31	Simple Substituted Alkanes	3.4-3.10
2/5	Cyclohexane Conformers	3.11-3.16
2/7	Enantiomers	4.1-4.8
2/12	Enantiomers continued/Optical Activity	4.9-4.11
2/14	Diastereomers, Meso Compounds, and Other Isomers	4.12-4.18
2/19	<b>Exam I</b>	
2/21	Alkenes, Alkene Nomenclature and Reactivity	5.1-5.5
2/26	Thermodynamics and Kinetics	5.6-5.14
2/28	Simple Addition Reactions of Alkenes	6.1-6.6
3/5	Carbocation Rearrangements	6.7
3/7	More Complex Addition Reactions of Alkenes	6.8-6.16
3/12	<b>NO CLASS - SPRING BREAK</b>	
3/14	<b>NO CLASS - SPRING BREAK</b>	
3/19	Alkynes, Alkyne Nomenclature and Reactivity	7.1-7.12
3/21	Delocalized Systems	8.1-8.9
3/26	Reactions of Delocalized Systems	8.10-8.16
3/28	<b>Exam II</b>	
4/2	$S_N2$ Reactions	9.1-9.2
4/4	$S_N1$ Reactions	9.3-9.5
4/9*	Elimination Reactions	9.6-9.11
4/11*	Factors Affecting $S_N$ and E Reactions	9.12-9.17
4/16	Reactions of Alcohols, Ethers, and Epoxides	10.1-10.8
4/18	Reaction of Amines and Sulfur-Containing Compounds	10.9-10.12
4/23	Organometallic Compounds	11.1-11.5
4/25	<b>Exam III</b>	
4/30	Radicals and Halogenation of Alkanes	12.1-12.6
5/2	Radical Reactions	12.7-12.12
5/9	<b>Final Exam 11:30-1:45</b>	

**\*Note that Dr. Crick may be attending a conference with research students from April 8-11. If that is the case, alternate online assignments will be given on Moodle.**

## **Policies and Information**

### **Safety**

All appropriate safety guidelines will be adhered to strictly. Safety goggles must be worn at all times in the laboratory. In addition, the student must dress appropriately. Shoes that entirely cover your feet and clothing that entirely covers your torso and legs must be worn. Shoes with high heels, shorts, dresses/skirts, and long, flowing clothing will not be permitted in the lab. No exceptions will be permitted. Consult with the instructor if you have any questions. Students who do not follow safety instructions may have points deducted, be asked to leave without the possibility of make up or be dropped from the course.

### **Electronic Device Policy**

Use of cell phones for non-class functions during class is disruptive and is not permitted. Students may use laptop or tablet computers to take notes during class. This privilege may be suspended at any time if it becomes disruptive to the class. During examinations, all electronic devices except non-programmable calculators must be inaccessible. Anyone with an accessible cell phone during exams will be assumed to be engaging in academic dishonesty. See the Academic Dishonesty section for consequences.

### **Recording Policy**

Audio recording of lectures is permitted as long as it does not disrupt the class. Video recording is not permitted.

### **Accessibility/Accommodations**

Concord University is committed to responding to the needs of students with disabilities as defined by the Americans with Disabilities Act. Please inform your instructor at the beginning of the class semester if you have a disability and are requesting accommodations. It is your responsibility to self-disclose that you are requesting accommodations. The University and the instructor will provide you with a reasonable accommodation. You should register with CU's Disability Services Office, located in the Athens campus Jean and Jerry Beasley Student Center, Bottom Floor, across from the Campus Post Office. The Disability Services Office phone is 304-384-6086 or you can email the Director, Nancy Ellison, at [nellison@concord.edu](mailto:nellison@concord.edu) for assistance.

**Academic Dishonesty**

Refer to the [Concord University Catalog](#) for definitions and consequences of academic dishonesty.

**The instructor has a zero tolerance policy for academic dishonesty. Students guilty of academic dishonesty will receive an F for the course and dismissal from the University may be recommended.**

**Concord University Honor Code**

A Concord University Honor Code was approved by students, staff, faculty, administration, and the CU Board of Governors. The Code states:

*"As a member of the Concord University Community I will act with honesty and integrity in accordance with our fundamental principles and I will respect myself and others while challenging them to do the same."*

The Honor Code is intended to unite the Concord community behind a culture of honesty, integrity, and civility.

**Your enrollment in this course signifies your agreement to abide by the CU Honor Code.**

**Class/Online Attendance Policy**

Regular class attendance is part of a student's academic obligation at Concord. Irregular attendance may affect academic performance adversely and is detrimental to the atmosphere of a class. (See University Catalog Academic Policies and Procedures.) [Concord University Catalog](#).

**Emergency Alert System**

In an effort to increase safety and security on our campus, Concord University encourages everyone to register for instant text message alerts. Alerts will only be used for security and safety notices. All students, faculty, and staff are eligible to receive text message alerts on their cell phones or email alerts. Please contact the IT Help Desk for further assistance (304-384-5291).



## Emergency Information

Emergency/courtesy telephones are located at the main entrance of each residence hall and at various other locations on campus. Emergency telephones can be identified by the flashing blue light and will provide the user with a direct link to Public Safety at the press of a button. To report an on-campus emergency, call 304-384-5357 or 911. The Office of Public Safety is located on the bottom floor of the Rahall Technology Center. For further emergency information go to the [Office of Public Safety](#)

## Inclement Weather Policy

As a general policy, the University will remain in normal operations during adverse weather conditions. In the event of severe weather conditions, the following may occur:

- University Closure  
No students or employees are to report.
- Classes Cancelled  
Students do NOT report BUT employees are expected to report to work at their normal time.
- Operating on an Inclement Weather Delay  
Under this schedule, all 8 a.m. classes will start at 10 a.m. Students and faculty will follow the Inclement Weather Schedule. (See [Athens/Beckley Inclement Weather Schedules](#).)

*\*Announcements invoking the late schedule or other options referenced above are aired on area radio and television stations and are sent as text and email messages to those enrolled for this service.*

## Student Conduct

In classrooms, online, laboratories, and during any activities that are part of course requirements, students are expected to observe reasonable rules of conduct. Failure to follow safety rules in the laboratory will lead to instructor dismissal from the course.

## Sexual Harassment & Assault

Federal law, Title IX, and Concord University policy prohibits discrimination, harassment, and violence based on sex and gender (Including sexual harassment, sexual assault, domestic/dating violence, stalking, sexual exploitation, and retaliation). If you or someone you know has been harassed or assaulted, you can receive confidential counseling support

through the Concord University Counseling Center (304-384- 5290). Alleged Violations can be reported non-confidentially to the Concord University Title IX Coordinator at 304-384-6327 or [titleix@concord.edu](mailto:titleix@concord.edu). Reports to Campus Security can be made at (304-384-5357). As an employee at Concord University, I am a mandatory reporter which means I must report any sexual misconduct I am made aware of. This includes verbal or written (such as in an assignment) disclosures of sexual harassment or sexual assault.

### **Technology Services**

Contact the CU Help Desk at extension 5291 from campus or 304-384-5291 off campus. You may also e-mail [cuhelpdesk@concord.edu](mailto:cuhelpdesk@concord.edu).

### **Syllabus Disclaimer**

"This syllabus is subject to change based on the needs of the class. Please check it regularly."