

**Instructor:** Dr. Nolan Carter

**Office:** 201B Manion Hall

**Phone:** 450-5941

**Email:** Ncarter@uca.edu (put CHEM 2401 in subject line)

**Webpage:** Course materials are posted on Blackboard

<b>Lecture:</b>	M,W, F	11:00 AM - 11:50 AM		Online
<b>Lab:</b>	M	2:00 PM – 4:50 PM	(CRN 33007)	Manion 306
	T	8:00 AM -10:40 AM	(CRN 33009)	
		10:50 AM -1:30 PM	(CRN 33010)	
<b>Office hours:</b>	M, F	9:30-10:30 AM		
	W	1:00-2:30 PM		
		And by appointment		

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**\*\*Course policies are subject to change with notice due to public health issues, inclement weather, or other circumstances\*\***

### Required course materials:

*Organic Chemistry, 5th ed.*, Janice Gorzynski Smith, McGraw-Hill.

Labflow subscription (see instructions on Blackboard)

Safety goggles

Lab notebook

Molecular model set

### Optional Course Materials:

*Student Study Guide/Solutions Manual for use with Organic Chemistry (5th ed.)*, Janice Gorzynski Smith.

### Course Description and Objectives:

CHEM 2401 (Organic Chemistry 1) is the first part of a two-semester sequence which is continued with CHEM 3411 (Organic Chemistry 2). Organic Chemistry 1 is an introduction to the field of organic chemistry and covers the structure, properties, and reactivity of compounds such as alkanes, alkyl halides, and alcohols. Students are expected to gain an understanding of structure and bonding in organic molecules, nomenclature of important classes of organic molecules, as well as fundamental organic reactions and the mechanisms by which they occur.

### Prerequisite:

A grade of "C" or better in CHEM 1451 (College Chemistry 2) is required to take CHEM 2401 (Organic Chemistry 1).

### Attendance Policy:

Lecture will be online using Zoom or a similar platform. You are expected to attend and a record of attendance will be kept.

Laboratory attendance is required. If a laboratory experiment is missed for acceptable reasons (official UCA activity, documented illness, etc.), the missed lab experiment will be made up or dropped at the instructor's discretion. If a laboratory experiment is missed without an acceptable excuse, a grade of "0" will be assigned. Missing lab without an acceptable excuse may also result in being dropped from the course for non-attendance. You must arrive on time. Tardiness to lab or inattention (such as phone use) during the prelab lecture may result in a deduction of points or a grade of "0".

Makeup exams are not given. If an exam is missed with an acceptable excuse the other exams (excluding the final exam) will be weighted more heavily to make up the difference.

## How to Be Successful in This Class:

1. **Be prepared.** Read through the material we will cover (both the book and the slides) in lecture **before** class. Identify the material that you think is hard to understand and come prepared to ask questions about it.
2. **Participate.** Don't be afraid to ask questions and answer questions I ask the class!
3. **You must work the homework problems.** In order to truly grasp the material we cover, you will need to develop your skills by working problems from your textbook. The homework problems will not be collected and graded but they are the best way to prepare for exams. Don't get behind! **This course is more difficult than College Chemistry 1 and 2 and will likely require more work outside of class.**
4. **Keep in mind that that chemistry courses are comprehensive.** Although the only exam that is officially "comprehensive" is the final exam, you can't forget the chapter 1 material and expect to understand what is going on when we get to chapter 7.
5. **Know when to seek help.** If you are having trouble with the course or have a question be sure to contact me.

## Grading:

Your grade in this course will be based upon your performance in lecture and laboratory. **The lecture portion of the course is worth 75% of the total grade and the laboratory portion is worth 25%.** Your lecture grade will be based upon your scores on 3 exams, a comprehensive final, and your best 4 of 5 quizzes. The laboratory grade will be based upon your prelab quizzes, lab notebook, postlab questions, attendance, effort, and the quality of your experimental results (see laboratory section for further details). The number of tests, quizzes, or labs is subject to change.

Lecture		Lab	
3 Exams (200 pts each)	600	Safety/Orientation Lab/ Safety Agreement	20
Best 4 of 5 Quizzes (25 points each)	100	4 In person (wet) labs (50 points each)	200
Final Exam (Comprehensive)	200	5 Online labs (40 points each)	200
<b>Total</b>	<b>900 points</b>		<b>420 points</b>

$$\text{Your Grade} = \left( \frac{\text{Your Lecture Points}}{\text{Total Lecture Points}} \right) (75) + \left( \frac{\text{Your Lab Points}}{\text{Total Lab Points}} \right) (25)$$

Tentative Grading Scale	
Final Percentage	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D
≤ 59	F

**Exams:** Exams will be given during lab periods. The three exams will consist of questions similar to the suggested problems and examples worked in class. Material from the laboratory may also be covered on exams. The best way to prepare for the exams is to work as many problems as you can. The suggested problems are the minimum amount you should work. No exam will be dropped.

**Quizzes:** Quizzes will be open book/open notes and given via Blackboard. The lowest quiz will be dropped.

**Final Exam:** The cumulative final exam will be given online through Blackboard on Monday, May 3. It is scheduled for 2-4 PM.

## Blackboard:

Class materials such as lab procedures, homework problems, slides, and exams from previous semesters will be posted on the Blackboard page for this course. You will also take quizzes and the final exam using Blackboard.

## Laboratory Safety:

**In addition to the usual safety precautions associated with working in a chemistry lab, you are required to wear a face covering to lab. The face covering must cover your mouth and nose and be worn at all times while in the building. Non-compliance with this requirement will result in dismissal from lab, and a grade of zero for the experiment.**

During the course of the semester, you will be working with a wide variety of organic chemicals. Many organic chemicals are hazardous—they can be toxic, carcinogenic, caustic, or flammable. You should handle all organic chemicals carefully. Disregarding safety practices will result in dismissal from lab and a grade of “0” for the day. The most important aspect of safety in an organic chemistry laboratory is eye protection. Safety glasses must be worn at all times. **You will not be allowed to attend lab if you do not have safety glasses. Shorts and open-toed shoes such as sandals may not be worn in lab. You will not be allowed to attend lab if you are dressed inappropriately.** The balances and other common areas should be kept clean and orderly. Failure to maintain an orderly laboratory may result in a deduction of points from the entire class. **You must read and agree to the safety agreement posted on Blackboard prior to the first laboratory meeting the week of January 25.**

## Labflow:

**One of the required course materials is a Labflow subscription.** Detailed instructions on enrolling are posted on Blackboard in the Lab Materials section. Be sure to register for the correct CRN and lab group. For example if you are in the Monday 2:00 lab (CRN 33007) and in group A, you would register for 33007A. Labflow is an online service that will allow you to take lab quizzes and access videos that explain techniques we will use in lab. In the event that we must transition to lab that is totally online, Labflow will be used to a greater extent.

## Laboratory Policies and Grading:

- 1. Prior to in-person labs, there will be a prelab quiz given using Labflow.** Lab quizzes are worth ~10 points and will be available the Thursday before the week of the lab. They quiz must be completed prior to the start of your lab period or a grade of zero will be assigned.
- 2. During lab you will keep a notebook.** See the table on the following page for what should be in your notebook. Your notebook pages will be turned in electronically by the due date (see lab schedule) for the experiment. Your notebook pages must be scanned and converted to a single pdf file then uploaded to Blackboard. The UCA library has scanners that will enable you to do this. Ask a library employee for assistance if necessary and do not wait until the last minute.
- 3. Postlab questions will be submitted using Blackboard.** Look for the link in the Lab Materials section of Blackboard. If you are asked to perform a calculation (such as percent yield) be sure to show every step of your work, include all units and chemical names, and use the correct number of significant figures. All lab materials are due on Wednesday by 11:59 PM the week after the last group completes the lab (see lab schedule).

4. **All wet labs are worth 50 points total.** The approximate breakdown of points is: Prelab quiz = 10 points, Notebook pages = 25 points, Postlab questions = 15 points. This may vary slightly from lab to lab, depending on the length of the prelab quiz and the number of postlab questions.

5. **Since we can only accommodate 12 students in the lab this semester, you will not attend lab every week.** On weeks you are not attending lab in person, you will work on a dry lab using Blackboard. See the lab schedule on page 6 for details and due dates.

6. **The online labs have no prelab quizzes or notebook requirement.** They are worth 40 points each. All materials for the online lab can be accessed from Blackboard and you may complete the lab anytime you wish, as long as it is completed by the due date in the lab schedule. Like wet labs, all online dry labs are due on Wednesdays by 11:59 PM (see lab schedule).

## Lab Notebook Information

<b>Notebook section</b>	<b>Contents/description</b>
<b>Page headers</b>	At the top of every page write your name, the experiment title, the date, and your group (A or B). For this and all other sections use a blue or black pen, not a pencil.
<b>Chemical Information, Safety Information – do this <u>before</u> lab to save time</b>	Summarize chemical hazards and safety precautions discussed in the experiment handout. Record any physical constants you are given (molar masses, densities, boiling points, etc.) Write out the reaction you are performing or the structures of the compounds you are working with. Ignore the center dividing line for this section.
<b>Procedure</b>	Write out the procedure in past tense as you perform it. Write on the left side of the center dividing line. You may use numbered steps or bullet points. Skip a line between each step for legibility. You should have enough detail that someone could repeat the experiment you performed. Always include chemical names and units. Don't make up your own abbreviations.
<b>Observations</b>	Write observations on the right side of the center dividing line. Write observations across from the corresponding section of the procedure. An observation could be a mass or temperature you measure. It could also be something you see like a color change, bubbling, or precipitate formation. As always be sure to include chemical names and units when needed.

## General UCA Policies:

All students are expected to comply with the University policy regarding face coverings (see <https://uca.edu/coronavirus/students/>).

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.

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.

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.

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 is encouraged to report the act to the Title IX coordinator, deputy coordinator, or employee with the authority to institute corrective measures on behalf of the University. An investigation of a formal complaint of Title IX Sexual Harassment will only be initiated when the Complainant (individual who suffers actual harm from the violation of the Title IX Sexual Harassment Policy) or the Title IX Coordinator signs a complaint. 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 encouraged if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

Students should familiarize themselves with all policies included in the *Student Handbook*, particularly the following:

- Sexual Harassment Policy
- Academic Policies

## Tentative Lecture Schedule

**\*\*Due to the ongoing COVID health crisis, the course schedule and assignments are subject to change. If this is the case, you will be notified by email and a revised syllabus will be posted on Blackboard.\*\***

Week	Lecture
1/19-1/22	Ch. 1 Structure and Bonding
1/25-1/29	Ch. 1 cont., Ch. 2 Acids and Bases
2/1-2/5	Ch. 2 cont.
2/8-2/12	Ch. 3 Intro to Organic Molecules
2/15-2/19	Ch. 4 Alkanes
2/22-2/26	Ch. 4 cont., Ch. 5 Stereochemistry <b>Exam 1 – Monday, 2/22 or Tuesday, 2/23, In lab. See lab schedule for times.</b>
3/1-3/5	Ch. 5 cont.
3/8-3/12	Ch. 6 Organic Reactions, Ch. 7 Alkyl halides & Nucleophilic Substitution
3/15-3/19	Ch. 7 cont.
3/22-3/26	Spring Break
3/29-4/2	Ch. 8 Alkyl halides & Elimination <b>Exam 2 – Monday, 3/29 or Tuesday, 3/30, In lab. See lab schedule for times.</b>
4/5-4/9	Ch. 8 cont., Ch. 9 Alcohols, Ethers, & Epoxides
4/12-4/16	Ch. 9 cont., Ch. 10 Alkenes
4/19-4/23	Ch. 10 cont., Ch. 11 Alkynes
4/26-4/29	Ch. 11 cont. <b>Exam 3 – Monday, 4/26 or Tuesday, 4/27, In lab. See lab schedule for times.</b>
4/30	No Class, Study Day
5/3	<b>Final Exam (Ch. 1-11) 2:00-4:00 PM</b>

**Drop Deadline: Monday, April 12**

## Tentative Lab Schedule

**\*\*Due to the ongoing COVID health crisis, the course schedule and assignments are subject to change. If this is the case, you will be notified by email and a revised syllabus will be posted on Blackboard.\*\***

<b>Week</b>	<b>Group A</b>	<b>Group B</b>
1/19-1/22	<b>Online:</b> Safety Agreement ( <b>Due 1/27</b> , must be completed before you can do lab work)	<b>Online:</b> Safety Agreement ( <b>Due 1/27</b> , must be completed before you can do lab work)
1/25-1/29	<b>Online:</b> General Chemistry Review ( <b>Due 2/3</b> )	<b>Online:</b> General Chemistry Review ( <b>Due 2/3</b> )
2/1-2/5	<b>In person:</b> Safety/Orientation Monday 2:00 - 3:10 or Tuesday 8:00 - 9:10 or Tuesday 10:50 - 12:00	<b>In person:</b> Safety/Orientation Monday 3:25 - 4:35 or Tuesday 9:25 - 10:35 or Tuesday 12:15 - 1:25
2/8-2/12	<b>In person:</b> Thin Layer Chromatography ( <b>Due 2/24</b> )	<b>Online:</b> IR Spectroscopy ( <b>Due 2/24</b> )
2/15-2/19	<b>Online:</b> IR Spectroscopy ( <b>Due 2/24</b> )	<b>In person:</b> Thin Layer Chromatography ( <b>Due 2/24</b> )
2/22-2/26	<b>In-person: Exam 1</b> Monday 2:00 - 3:10 or Tuesday 8:00 - 9:10 or Tuesday 10:50 - 12:00	<b>In person: Exam 1</b> Monday 3:25 - 4:35 or Tuesday 9:25 - 10:35 or Tuesday 12:15 - 1:25
3/1-3/5	<b>In person:</b> Bromination ( <b>Due 3/17</b> )	<b>Online:</b> <sup>13</sup> C NMR Spectroscopy ( <b>Due 3/17</b> )
3/8-3/12	<b>Online:</b> <sup>13</sup> C NMR Spectroscopy ( <b>Due 3/17</b> )	<b>In person:</b> Bromination ( <b>Due 3/17</b> )
3/15-3/19	<b>In person:</b> Epoxidation ( <b>Due 4/14</b> )	<b>Online:</b> Stereochemistry ( <b>Due 4/14</b> )
3/22-3/26	<b>No lab, Spring Break</b>	<b>No lab, Spring Break</b>
3/29-4/2	<b>In person: Exam 2</b> Monday 2:00 - 3:10 or Tuesday 8:00 - 9:10 or Tuesday 10:50 - 12:00	<b>In person: Exam 2</b> Monday 3:25 - 4:35 or Tuesday 9:25 - 10:35 or Tuesday 12:15 - 1:25
4/5-4/9	<b>Online:</b> Stereochemistry ( <b>Due 4/14</b> )	<b>In person:</b> Epoxidation ( <b>Due 4/14</b> )
4/12-4/16	<b>In person:</b> Alcohol Dehydration ( <b>Due 4/28</b> )	<b>Online:</b> Green Chemistry ( <b>Due 4/28</b> )
4/19-4/23	<b>Online:</b> Green Chemistry ( <b>Due 4/28</b> )	<b>In person:</b> Alcohol Dehydration ( <b>Due 4/28</b> )
4/26-4/29	<b>In person: Exam 3</b> Monday 2:00 - 3:10 or Tuesday 8:00 - 9:10 or Tuesday 10:50 - 12:00	<b>In person: Exam 3</b> Monday 3:25 - 4:35 or Tuesday 9:25 - 10:35 or Tuesday 12:15 - 1:25