CHEM 232 – Organic Chemistry II – Lecture Course  
CRN 22921, Section 03, T-Th 9:25 – 10:40 AM, SSMB 138

Instructor: Prof. Brooke A. Van Horn  
E-mail: vanhornba@cofc.edu (best way to reach me)  
Physical Office: School of Science and Math Building (SSMB) 104

Instructor Schedule and Communication: I want you to ask questions so that you can be successful in this course! Communication with me can occur in many ways, including e-mail and the OAKS discussion boards, in addition to the listed office hours. A few procedures to keep in mind:

Ask Three, Then Me - I receive many e-mails every day, many from students asking questions that could quickly be answered by reading the syllabus carefully or asking a classmate. Thus, before e-mailing me, please follow these steps:
1. Consult the class schedule and syllabus.
2. Check OAKS for announcements and instructions, including the discussion boards
3. Confer with three classmates or post on the discussion board(s) for help.

If you still don’t know the answer to your question, you may e-mail me, especially if it is a personal/private matter not needing the feedback of peers. Following these steps will help me maintain my sanity, which will benefit all of us! I will respond to e-mails within 24 hours.

Office Hours (all online via Zoom): tentatively by appointment - Calendly link on OAKS

Required Text and Materials:
  o Loose-leaf (purchase): ISBN 9781119659594 (at CofC Bookstore)
• WileyPLUS (Free this semester at https://learn.wileyplus.com/courses/98401 with access code A04093)
• ClutchPrep ($30 online video problem solving and other tools, https://www.clutchprep.com/join - Class Code VANHORN5)

OAKS: Course materials, including the syllabus, homework, participation activities, graded items and a gradebook will be made available through the OAKS system accessed via MyCharleston or https://lms.cofc.edu

Co-Requisite and Drop Policy: CHEM 232L Laboratory is a pre- or co-requisite of this lecture course. If you drop either course, then you must also drop the other – no exceptions. The withdraw deadline is March 25th, 2022.

Course Structure:

Outside of Class:
1) Preparation for lecture requires reading ahead in the textbook on general content being covered in class. This may also include bringing worked problems to class as part of your engagement in the course.
2) There will be ClutchPrep problems (with video solutions) and WileyPLUS problems/worked problem videos assigned. These will generally be assigned once or twice per chapter, depending on the
density of content in the chapter, and usually due within a couple of days from when content was covered in class.

3) There will also be written homework (usually assigned weekly and due to be uploaded to the labeled dropboxes on OAKS).

**In Class:**

The synchronous 75-minute class periods will be used for (1) content summaries from chapter material, (2) guided in-class problem solving with Dr. Van Horn, (3) working problems (individually or in groups), and (4) clarification of material by me as needed throughout the semester. Additionally, daily 5-10 minute quizzes and our four in-person only/paper exams will be given during these assigned class times.

**NOTE:** Saving many assigned activities (reading, WileyPLUS, ClutchPrep, Written HW, etc.) all for one day or night is NOT advised. Space your work on them out daily and ahead of the due dates.

**Participation and Quizzes:** Participation in the course is required at 10 % of your overall grade. It is very difficult to be successful in organic chemistry practicing the art of thinking in, translating, and writing/drawing organic chemistry. You are responsible for learning a substantial amount of required material for this course (most of which will be covered both in the lectures and in the textbook, but some of which may be in class only or in the textbook only.) Attendance in the course is required to earn the participation grade points. If you do the work in class with each other and me, keep up, and you will be rewarded. Please use the OAKS calendar and Chapter Checklists to make sure you are tuning in to all that is required!

Additionally, there are discussion boards set up for more “routine” questions, including a **Course Lounge** (for general questions related to the course that may be answered by your peers or by me as the instructor) and **Chapter Specific Questions** boards (for content related questions that may more quickly be answered by your peers!) Please use these boards to interact constructively – it is amazing what we can accomplish as a group!

During the term we will have daily quizzes, given either in or outside of class. These quizzes will be meant as “quick checks” and will be low stakes snapshots of where you each are individually on material multiple times prior to any exam. The general structure will make it so that you only have score greater than or equal to 3/5 points on the quiz to received 100%; at least 2/5 points to get a 75% and at least 1/5 points to get a 50% on the quiz. The goal is for you to learn where there may be gaps in your understanding and also for me as the professor to add additional support to the class to fill those gaps. Often we will go over these after taking them in class; therefore **no make-up quizzes, no exceptions.**

**Technical Difficulties/FAQs:** If you have questions or problems related to the course, please follow the communication procedures noted above. If you have technical problems, please contact Student Computing Support or Helpdesk using these methods:

☆ **Student Computing Support (for questions on campus about computing)**
  ➢ 843-953-5457
  ➢ studentcomputingsupport@cofc.edu
  ➢ blogs.cofc.edu/scs

☆ **Helpdesk (other on campus services for IT)**
  ➢ 843-953-3375
  ➢ helpdesk@cofc.edu
  ➢ it.cofc.edu/help/helpdesk

It is important to resolve technical problems swiftly, so do not delay getting help when required. Computer failure or browser issues, problems with ClutchPrep (not due to a system-wide documented error) or unavailability do not constitute an excuse for not completing assignments.
Course Technical Goals: This second semester course is part of a two-term sequence and is taught to introduce the structure, properties, and reactivity of the class of chemical compounds encompassed by the descriptor “organic.” Included in this classification are biomolecules, many synthetic drug molecules, plastics/polymers, and industrial solvents, among many others. The knowledge of the basic concepts and learned study skills from the first semester course, CHEM 231/HONS 192, are the foundation from which you will build upon in this second semester course, CHEM 232, and will prepare you for success in advanced chemistry, biochemistry, and chemical/molecular biology courses when approached with similar diligence. Please see the learning outcomes at the end of this document for more specific details.

IMPORTANT: This course moves very quickly and the material presented/learned last week is the foundation for the material being covered this week. Be prepared to study every day (approximately 3 h for every hour of lecture to complete reading, lecture review, and assigned problems) and come to office hours with your questions. Working problems should be the bulk of your study time!

As a student in CHEM 232, the burden of the learning is on you; as the instructor, I am here to present and explain the course material to the best of my ability and to help you master the material by providing examples and problem sets to practice applying the concepts. As you will hear from upperclassmen and faculty alike, organic chemistry is learned through SOLVING PROBLEMS not by memorizing reagents or mechanisms.

This flipped format should encourage more exchanges between you as the students and me as the professor than you might be accustomed to in a traditional physical classroom. You will be expected to do the same sorts of activities that you do in a traditional organic chemistry class such as drawing and writing organic chemistry and receiving guided by feedback from me but the flipped format will allow for daily immersive engagement activities, more worked problems in class and a generally more productive dialogue between you and me! It has been my experience over three years of teaching in this format that second semester organic chemistry is perfectly suited for this environment if you as the student actively engage from the beginning. I hope you will be open to the experience and I look forward to watching you thrive in it.

We will be covering the following textbook topics in CHEM 232 during our video lectures and in-class sessions:

- **Chapter 12** – Alcohols and Phenols
- **Chapter 13** – Ethers and Epoxides
- **Chapter 16** – Conjugated Pi Systems and Pericyclic Reactions (tentative end Exam #1)
- **Chapter 17** – Aromatic Compounds
- **Chapter 18** – Aromatic Substitution Reactions
- **Chapter 19** – Aldehydes and Ketones (tentative end Exam #2)
- **Chapter 20** – Carboxylic Acids and Their Derivatives
- **Chapter 21** – Alpha Carbon Chemistry (first half tentative end Exam #3; 2nd half on Exam #4)
- **Chapter 22** – Amines
- **Chapter 23** – Introduction to Organometallic Chemistry (on Exam #4)

Grading Policy: Earning the minimum percentage to achieve an “A” necessitates strong study skills and diligence in working the suggested practice problems which will prepare you to perform well on the evaluation tools in the course including: (a) four in-class exams, (b) ClutchPrep video homework, (c) WileyPLUS homework, (d) written homework, (e) engagement in the course through participation avenues and quizzes and (f) one ACS final exam.

Two methods to determine the final grade percentage will be considered (as follows) with the final grade being assigned from the one giving the higher score.
Method I:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four (4) Exams</td>
<td>60%</td>
</tr>
<tr>
<td>One (1) Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Participation + Quizzes (two drops)</td>
<td>10%</td>
</tr>
<tr>
<td>Electronic Homework (two drops)</td>
<td>7.5%</td>
</tr>
<tr>
<td>Written Homework (two drops)</td>
<td>7.5%</td>
</tr>
<tr>
<td><strong>Total Grade</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Method II: (Beneficial for a missed or poor exam)

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three (3) Exams – highest 3</td>
<td>45%</td>
</tr>
<tr>
<td>One (1) Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Participation + Quizzes (two drops)</td>
<td>10%</td>
</tr>
<tr>
<td>Electronic Homework (two drops)</td>
<td>7.5%</td>
</tr>
<tr>
<td>Written Homework (two drops)</td>
<td>7.5%</td>
</tr>
<tr>
<td><strong>Total Grade</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Exams: Four exams will be used to evaluate your level of understanding of the material presented in lecture, the readings in the text, and the practice problems assigned. The exact exam format will vary from test to test, but will contain multiple choice questions, short answer/ranking problems, drawing of mechanisms, and at least one larger "bring-it-all-together" free response problem. The exams will be given during class and taken in the physical classroom on paper. As shown in the grading schemes above, it is possible to miss one exam (or do poorly on one exam) and complete the course with 100% credit. The lowest exam will be replaced in the final grade calculation if the final exam grade is higher than that lowest exam score. However, there will be an optional 5th exam given for any student missing a second exam of the four semester exams to avoid the score of zero and provide some flexibility in handling this time of COVID-19. This exam will be given during the week after Thanksgiving and will be cumulative, given as a review in preparation for the final exam. **No other make-up exams will be given – no exceptions.**

Exam Dates (for Spring 2022):

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex 1</td>
<td>Thurs 2/10</td>
</tr>
<tr>
<td>Ex 2</td>
<td>Tues 3/1</td>
</tr>
<tr>
<td>Ex 3</td>
<td>Thurs 3/31</td>
</tr>
<tr>
<td>Ex 4</td>
<td>Tues 4/19</td>
</tr>
</tbody>
</table>

Homework: There are a three important levels of homework that you will be asked to complete.

1. I also provide a list of suggested problems from the textbook for you to work – these should be done by hand and brought to me when you do not understand them from the solutions manual. These suggested problems are NOT GRADED but can be used in building exam problems – they are expected to be done!

2. Every 2-3 class periods, there will be a set of written problems assigned, created by me, to reflect the material covered in lecture and to supplement the other types of homework you are working through. These extra problems sets will target higher level problem solving and can be done cooperatively, so long as the names of each collaborator are acknowledged in writing on the submission. Each student must turn in a written set of worked problems for these assignments to be uploaded electronically as a PDF in a labeled OAKS
dropbox. These are GRADED for effort between 0 or 100, not exclusively on correctness. **Completion of these written assignments will be weighted as 50% of your Homework grade.** The lowest single score will be dropped from the written homework grade calculation at the end of the semester. Solutions to these assignments will only be made available after assignments are due. You are welcome to discuss them among yourselves or to ask questions of me in office hours or your peers prior to the due date. I will not however "give" you the answers! 😊

(3) Each chapter will be assigned a set of GRADED online ClutchPrep video homework activities to be completed by the due date noted for each assignment. These assignments are NOT accepted past the due date. The lowest single score from the ClutchPrep homework will be dropped from the homework grade calculation at the end of the semester. **Completion of these ClutchPrep assignments will be weighted as 50% of your Homework grade.**

**Final Exam:** The final exam will be an ACS multiple-choice final (70 questions in 110 minutes) and it will be given in class as scheduled by the Registrar’s Office, currently set for 10:30-12:30 AM on April 30th, 2022. This exam covers the full year of organic chemistry and will represent your cumulative experience in organic chemistry, not just CHEM 232. It is my hope you will feel accomplished and proud of your effort over the semester when taking this exam. **The final exam will be worth at least 15% of your course grade.**

**Grading Scale:** The grading scale below reflects the grade percentages necessary to achieve each letter grade:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>100-93.0</td>
</tr>
<tr>
<td>A-</td>
<td>92.9-90.0</td>
</tr>
<tr>
<td>B+</td>
<td>89.9-87.0</td>
</tr>
<tr>
<td>B</td>
<td>86.9-83.0</td>
</tr>
<tr>
<td>B-</td>
<td>82.9-80.0</td>
</tr>
<tr>
<td>C+</td>
<td>79.9-77.0</td>
</tr>
<tr>
<td>C</td>
<td>76.9-73.0</td>
</tr>
<tr>
<td>C-</td>
<td>72.9-70.0</td>
</tr>
<tr>
<td>D+</td>
<td>69.9-67.0</td>
</tr>
<tr>
<td>D</td>
<td>66.9-63.0</td>
</tr>
<tr>
<td>D-</td>
<td>62.9-60.0</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
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</tbody>
</table>

Final grades will be posted online through MyCharleston as FERPA (The Family Educational Rights and Privacy Act) restricts instructor ability to give these grades by posting, e-mailing, or over the phone.

**Inclement Weather, Pandemic or Substantial Interruption of Instruction:** If in-person classes are suspended, I will announce a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools.

**Honor Code Policy:** Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.
Students can find the complete Honor Code and all related processes in the Student Handbook at: http://deanofstudents.cofc.edu/honor-system/studenthandbook/.”

In addition, students in this course are also expected to be conscious of and conform to the standards provided by the Department of Chemistry and Biochemistry Policy on Scientific Integrity (link on the Department main page and provided in laboratory class). Consultation and use of services such as Chegg and CourseHero to obtain answers for graded work are considered in violation of the Honor Code when submitting individual work of any kind in CHEM 232.

**Students with Needing Accommodations:** Please contact me (as early as possible) if you have been approved to receive accommodations through SNAP Services. Consult the Student Guide to SNAP Services for more information: http://disabilityservices.cofc.edu/documents/student-guide.pdf

**Essential Student Learning Outcomes for CHEM 231 and CHEM 231L:**

The successful student is expected to (Lecture):
- Demonstrate basic communication skills within organic chemistry for example structure, nomenclature, mechanisms, reaction schemes
- Define and use fundamental concepts associated with physical organic chemistry
- Using foundational skills of organic reactions to predict organic reaction outcomes

The successful student is expected to (Laboratory):
- Demonstrate awareness of and compliance with safety standards within the organic chemistry laboratory
- Apply and perform the basic processes used in organic chemistry
- Succinctly summarize experimental findings

**Essential Student Learning Outcomes for CHEM 232:**

The successful student is expected to:
- Demonstrate intermediate communication skills within organic chemistry for example structure, nomenclature, mechanisms, reaction schemes
- Draw and interpret mechanisms for reactions of increased sophistication
- Integrate knowledge and principles of organic reactions and reactivities to make reasonable predictions about likely outcomes when presented with related chemistry