CHEM 232 – Organic Chemistry II Lecture (version 7-6-2016)
Summer II 2016, CRN 30100, Section 02
Monday – Friday, 1:15 – 3:00 PM, SSMB 211

Instructor: Prof. Brooke A. Van Horn
E-mail: vanhornba@cofc.edu (best way to reach me if not in my office)
Office: School of Science and Math Building (SSMB) 104

Instructor Schedule: I want you to ask questions so that you can be successful in this course! However, if my
doors are closed and/or if I post that I am currently busy on my door, please respect this need for dedicated time
and come back later, attend scheduled office hours, or send an e-mail to have your concerns addressed.

Office Hours (in SSMB 104): MTWRF – 3:15-4:30 PM; other times by appointment only!
Weekly Help Session (led by BVH): Sunday afternoons, 4-5 PM in SSMB 100


OAKS: Course materials, including the syllabus, any extra problem sets, study guides, handouts, etc. will be
made available through the OAKS system accessed via MyCharleston.

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. The last day to withdraw from the course with a grade
of “W” will be Monday, July 25th, 2016.

Course Technical Goals: This second semester course is part of a two-semester 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 (> 5 h for the
average student – approximately 3 h for every hour of lecture to complete reading, lecture review, and
assigned problems) and come to review sessions and 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.

We will be covering the following textbook chapters/material topics in CHEM 232 during our in-class lectures:

Chapter 14 – NMR
Chapter 16 – Conjugation, Resonance, and Dienes (tentative end Exam #1)
Chapter 17 – Benzene and Aromatic Compounds
Chapter 18 – Reactions on Aromatic Compounds
Chapter 19 – Carboxylic Acids and the Acidity of the O-H Bond (tentative end Exam #2)
**Chapter 20** – Introduction to Carbonyl Chemistry; Organometallic Reagents; Oxidation and Reduction

**Chapter 21** – Aldehydes and Ketones – Nucleophilic Addition

**Chapter 22** – Carboxylic Acids and Their Derivatives – Nucleophilic Acyl Substitution (tentative end Exam #3)

**Chapter 23** – Substitution Reactions of Carbonyl Compounds at the alpha Carbon

**Chapter 24** – Carbonyl Condensation Reactions

**Chapter 25** – Amines (tentative end Exam #4)

**Chapter 26** – Carbon-Carbon Bond-forming Reactions in Organic Chemistry

***ADDITIONALLY: Chapters 13 on IR, MS will be further used in CHEM 232L and in lecture***

**Attendance Policy:** Attendance in lecture is REQUIRED. The grade of “WA” due to excessive absences WILL NOT be used in this course as it is unnecessary. It is very difficult to be successful in organic chemistry without attending the lectures, where you will be 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 lecture and in the textbook, but some of which may be in lecture only or in the textbook only.)

This being said, there are NO excused absences. If you do miss class, it is your responsibility to recover the required material, possibly from classmates. Additionally, please arrive to class on time. Late arrivals to quizzes, tests or the final exam will not be given extra time and the instructions will not be repeated. Any work/points missed (including exams, regardless of reason) will be given a grade of zero (0) for the final grade.

**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) quizzes, and (c) one ACS standardized 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.

<table>
<thead>
<tr>
<th>Method I</th>
<th>Method II</th>
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<tbody>
<tr>
<td>Four (4) Exams</td>
<td>Three (3) Exams – highest</td>
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<tr>
<td>One (1) Final Exam</td>
<td>One (1) Final Exam</td>
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<td>Quizzes (cannot be dropped)</td>
<td>Quizzes (cannot be dropped)</td>
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<tr>
<td>each 15 % of overall grade</td>
<td>each 15 % of overall grade</td>
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<td>60 %</td>
<td>45%</td>
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Additionally, any concerns or questions regarding the correctness of grades or individual graded work are to be addressed OUTSIDE of class and by appointment, not in common office hours for privacy reasons. Any requests for the addition of points back onto graded work will require (1) the original graded work, with NO additional marks after returned to the student, and (2) a formal typed document describing in detail where the mistake in grading was made and why (in chemical terms) the graded work demonstrates the correct answer. Lastly, requests to regrade work will only be considered if the above guidelines are followed and if the potential benefit of the regrade would result in at least 1 pt on a quiz (usually worth 10 points) or at least 2 points on an exam (usually worth 100 points.)
Exams: Four in-class 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 on the following dates:

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<th>Date</th>
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<tbody>
<tr>
<td>Monday,</td>
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<td>Monday,</td>
<td>Tuesday,</td>
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<td>July 11th</td>
<td>July 18th</td>
<td>July 25th</td>
<td>August 1st</td>
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Quizzes: These point-earning opportunities will be presented in class or online (approximately daily) to allow you to demonstrate how well you are keeping up with the day-to-day course material. Each quiz will be worth a minimum of 10 points (sometimes with potential bonus points above 10). The total points accumulated will be used to calculate a percentage and weighted as 20% of your total grade.

Final Exam: The final exam will be an ACS-standardized multiple-choice final given on August 5th at 1:15 - 3:00 PM (see the College of Charleston academic calendar; location - lecture room).

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

- 100-93 A 76-73 C
- 92-90 A- 72-70 C-
- 89-87 B+ 69-67 D+
- 86-83 B 66-63 D
- 82-80 B- 62-60 D-
- 79-77 C+ <60 F

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.

Honor Code Policy: Students are expected to be aware of and conform to the standards of the College of Charleston Student Honor Code Policy (linked from http://studentaffairs.cofc.edu/honor-system/index.php). 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).

Electronic Device Policy: One aspect of being a member of a community of scholars is to show respect for others by the way you behave and do your part to create or maintain an environment that is conducive to learning. Allowing your cell phone to ring or texting/messaging in class are examples of inappropriate behavior because it distracts your classmates and thus degrades their overall classroom experience. For the sake of your classmates, you are expected to turn off your cell phone or set it to mute/silence BEFORE you enter class — every class. I reserve the right to ask you to leave if I believe your attention or the classroom environment is compromised through electronic device use.
Essential Student Learning Outcomes for CHEM 231 and CHEM 231L:
First Semester of Introductory Organic Chemistry Lecture and Laboratory

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 Objectives for CHEM 232:
Second Semester of Introductory Organic Chemistry Lecture

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