

Chemistry 2212 – Modern Organic Chemistry II

Fall 2020

(Adaptations for Online Learning Highlighted)

<u>Instructors</u>	<u>Office Hours</u>	<u>Email</u>
Dr. Richard Hubbard	3:00-4:00 pm MTR Zoom	chemburn@uga.edu
Dr. Douglas Jackson	3:00-4:00 pm MWF Zoom 9:45-10:45 am T Zoom	dmjackson@uga.edu

Lectures:

Dr. Hubbard (13102) MWF 11:30 am - 12:20 pm, online synchronous and SLC 85*

Dr. Jackson (30449) MWF 4:10 pm - 5:00 pm, online synchronous and SLC 285*

*(Students will be **required** to utilize all highlighted online components but will **NOT be required** to attend the in-person option for the lecture component. Rotating attendance for the in-person option will be announced on ELC. Classroom attendance requires full cooperation with UGA COVID policies including social distancing and masks)

Required Textbook: *Organic Chemistry* Paula Yurkanis Bruice (8e, 2016).

Required Technology for Online Course: (two internet capable devices used in the following ways)

i. Class:

- a computer/phone/tablet (with working microphone, speaker/earbuds) capable of running Zoom and Turning Technologies App

ii. Exams: (same two devices used for spring/summer 2020 organic courses)

- a computer running GradeScope and ChemDraw (so you can access and work the exams)

- a smartphone/tablet/computer with camera or a free-standing webcam for the TA to continuously view you and your computer screen on Zoom during the exam

Required Ancillaries:

- *Study Guide and Solutions Manual for Paula Yurkanis Bruice Organic Chemistry*, 8e.

- *Turning Technologies app*. **Go to eLC homepage to register phone app. You must link to eLC and have a current Turning Point License to receive credit.**

- ChemBioDraw is REQUIRED for use in labs and exams. Download for Mac and PC free at:

https://eits.uga.edu/hardware_and_software/software/chembiooffice/

Access free from any platform browser using UGA vLab: <https://eits.uga.edu/support/vlab/>

Recommended: Molecular Model Set marketed for “organic chemistry” (*The Molymod* by Indigo Instruments, or comparable kit).

Attendance: CHEM 2212 is a rigorous and fast-paced course. Absences will seriously affect your grade. Attendance will be taken via Turning Technologies App and you are required to be in attendance at all lectures regardless of format. Attendance is specific to the section in which you are enrolled. Material for which students are responsible for each exam is described on the approximate course schedule (last page of syllabus) and will be updated if necessary, on eLC by Tuesday morning prior to the Wednesday exam.

Assigned Problems: To be successful in CHEM 2212 you must routinely work all of the assigned problems. You will be more successful if you work a few problems daily rather than all of the problems immediately prior to the exam. Use the solutions manual only after you have thoughtfully and carefully considered related lecture and textbook presentations of the material.

Hour Exams: Four 60-minute exams, each graded out of 100 points, will be administered Wednesday nights during a 7:45-9:45 pm exam period. A proctoring check-in period will begin on Zoom at 7:45 pm prior to each exam. The TA proctor must confirm student check-in prior to the beginning of the exam (Details to follow on ELC). Online exams will be released on GradeScope at 8:00 pm on the exam dates.

Wednesday	September 9, 2020	8:00 pm to 9:00 pm
Wednesday	October 7, 2020	8:00 pm to 9:00 pm
Wednesday	November 11, 2020	8:00 pm to 9:00 pm
Wednesday	December 2, 2020	8:00 pm to 9:00 pm

Your lowest hour exam score will be dropped.

Exam Requirements: Students are required to check-in on Zoom with their UGA ID. Students who cannot be identified during check-in will NOT be allowed to take OR UPLOAD the exam. Students will be asked to complete the exam on a web browser via GradeScope under TA supervision on Zoom as described in the Required Technology section. Students may also be asked to create structures in ChemDraw for upload during the exam.

Fall 2020 Organic Chemistry Online Exam Connectivity Issue Tolerances and Resolutions

A stable internet connection sufficient for taking the exams is a REQUIREMENT for this online exam format. If you are unable to complete the exam under proctoring supervision for the entire exam (check-in to submission) in GradeScope's online exam platform, you will receive an incomplete for that exam subject to the following tolerances:

- Students should attempt to resolve any issue known to them yet complete the exam to the best of their abilities. The instructor will review any issue and make a decision to resolve per the following guidelines.
- Students may use a web cam and position a mirror behind them so that the proctor sees what the student is looking at. This obviates the need for a smartphone and the vulnerability to any cell phone drops;
- One interruption of less than two minutes in internet connectivity will have no impact on the exam. Students will be allowed to finish and submit the exam;
- An extended interruption or multiple interruptions in internet connectivity during **one** exam will render the exam invalid. In this case, students will be allowed to remain in the course and take any remaining exams but will be assigned an Incomplete grade. To complete the course they may select one of the following options: 1) When they return to campus, they may take an ACS standardized exam as a makeup exam to replace the exam rendered invalid due to inconsistent internet connectivity, or 2) They may take an exam comparable to the invalid exam when it is offered during the Spring semester, or 3) use the exam as a drop exam
- Interruptions in internet connectivity for two or more exams during the Fall term will require an Incomplete grade. Students may complete the course in a subsequent semester.

Final Exam: A 90 minute **online** comprehensive final exam worth 130 points is scheduled for Monday, December 14, 2020 from 7:00-10:00pm. The final exam is mandatory and will be implemented in similar format and exam requirements as each of the first 4 exams. **Students who cannot be identified during check-in will NOT be allowed to take OR UPLOAD the final exam.**

Final Grade Determination: If you score below 50% on the final exam, you will receive an 'F' for the course. If you score 50% or higher on the final exam, your final grade will be based on the **total points** earned out of **450 total possible points**, summing **all three hour-exam scores (300 total possible points)**, **the final exam score (130 total possible points)**, and **up to 20 possible points for classroom responses using your clickers**. Final grade assignments are determined using the following scheme:

<u>Range</u>	<u>Points (out of 450)</u>	<u>Approximate %</u>
A	394-450 total points	87.5% - 100%
A-	382-393 total points	85.0% - 87.4%
B+	371-381 total points	82.5% - 84.9%
B	326-370 total points	72.5% - 82.4%
B-	315-325 total points	70.0% - 72.4%
C+	304-314 total points	67.5% - 69.9%
C	270-303 total points	60.0% - 67.4%
D	225-269 total points	50.0% - 59.9%
F	0-224 total points	< 50.0%

In-Lecture Credit: Class participation will be based upon your in-class responses using the Turning Technologies app. In-class questions will be asked at random during the semester and will vary in frequency based on the instructor. At the end of the semester, the percentage of the in-class questions that you answered will be converted into a corresponding number of points out of a possible 20 and will be factored into the 450 total points for the semester.

Exam Corrections and Regrades: We endeavor to grade exams consistently and accurately. However, if your exam is mistakenly marked as incorrect but your answer is in complete agreement with the posted exam key on ELC AND rubric on GradeScope, you may reply **from each question in GradeScope** with a brief description of your issue. We will make any necessary grading and totaling correction and your corrected total will appear on eLC when the subsequent exam scores are uploaded. BE CAREFUL! If we find that there is no error in grading or totaling, 5 points will be deducted from your exam total. "Grading correction" requests are accepted until Friday at 5pm the week graded exams are returned. **Instructors will not respond to credit questions pertaining to the exam until after the resubmission deadline has expired.**

Withdrawal Policy: The mid-point of the semester is October 13, 2020. The last day to withdraw from CHEM 2212 and 2212L is Tuesday October 27, 2020. A grade of 'W' is assigned to all withdrawals made prior to the withdrawal deadline, irrespective of performance in the course. Withdrawal is accomplished via the **Athena** system. You are not required to receive approval from your instructor. Go to the withdrawal section of Athena and follow the instructions. CHEM 2212 and CHEM 2212L are corequisite courses. You may not remain enrolled in CHEM 2212L if you withdraw from CHEM 2212. **There are no exceptions to this policy.** After the mid-semester withdrawal deadline (October 27, 2020), a student who withdraws from the course is assigned a grade of 'F' by the UGA registrar.

Incomplete Policy: An incomplete grade, 'I', may be assigned to students that are passing CHEM 2212

but are unable to complete **all** of their university coursework during the current semester due to unforeseen personal and/or medical circumstances. An incomplete grade is not assigned to students who are able to complete their university coursework but choose not to complete chemistry due to poor performance. Franklin College bylaws state that students failing a course are ineligible to be assigned an “I”.

Grading and Partial Credit: The Franklin College Bylaws state, “The standards by which grades are assigned, the number and relative weight of assignments on which grades are based, and decisions to allow students to makeup or retake exams or assignments missed for, or otherwise compromised by the student’s personal circumstances are solely within the discretion of the instructor.”

Email Etiquette: Do not send email to eLC accounts. Instructors may be reached via the primary email addresses listed above. You must allow at least 24hrs for a response due to the volume of emails that instructors receive on a daily basis. Your emails must be both courteous and coherent. Instructors will not reply to emails that are discourteous or indecipherable (slang, misspellings, etc...). Instructors may choose to (or have already answered) some common questions via the syllabus or eLC. Please check these resources first before sending an email. Experience has demonstrated that it is not effective to answer homework or concept questions via email.

Login to eLC: To Login to eLearning Commons, you will need a UGA MyID. If you have a UGAmail account, your UGAmail login and password will be your UGA MyID login and password. If you do not have a UGA MyID, go to <http://www.uga.edu/myid> and request one online. If you have an account and have forgotten your password, you can also reset your password by going to this site. **eLearning Commons is for scholarly communication only. It is not a complaint box or an advertising forum.** Course and grading concerns should be individually addressed during office hours with the lecture professor. Inappropriate use of eLearning Commons will result in revocation of eLC privileges for CHEM 2211 and possible dismissal from the course.

Academic Honesty: As a University of Georgia student, you have agreed to abide by the University’s academic honesty policy, “A Culture of Honesty,” and the Student Honor Code. All academic work must meet the standards described in “A Culture of Honesty” found at: www.uga.edu/honesty. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

Family Educational Rights and Privacy Act (FERPA): The Family Educational Rights and Privacy Act of 1974 (FERPA) protects the privacy of student education records and allows the student to determine what information should be confidential, and who should have access to that information. Professors cannot discuss the academic standing or progress of a student with anyone other than authorized university personnel unless a release is granted by the student. Professors cannot respond to academic standing or progress emails unless they originate from the student’s UGA email account. On occasion professors receive phone calls from parents and other concerned family members requesting information regarding student progress. Your professor will direct them to the student to obtain authorization prior to release of any protected information.

Course Syllabus: The course syllabus is a general plan for the course. Deviations announced to the class or placed on eLC by the instructor may be necessary.

APPROXIMATE COURSE SCHEDULE

Reading Assignment**Problem Assignment*****Chapter 8 – Delocalization of Electrons and Aromaticity**1-60, 61-76, 79-83, 85-95, 97-103, 109
Resonance Tutorial***Chapter 9 – Substitution & Elimination Reactions**

1-66, 67-121, 123-131

Chapter 10 - Reactions of Alcohols, Ethers & Epoxides

1-41,43-50,54-63,66-86,95,96

EXAM 1**September 9, 2020****8:00-9:00 pm Gradescope**

Chapter 11 - Organometallic Compounds

1-48

Chapter 12 - Radical Reactions

1-11, 13-23, 26-34, 36-50
Curved Arrows Tutorial**EXAM 2****Wednesday, October 7, 2020****8:00-9:00 pm Gradescope**

Chapter 15 – Reactions of Carboxylic Acids and Derivatives

1-87

Chapter 16 – Reactions of Aldehydes and Ketones

1-87,89-93,98

Chapter 17 – Reactions at the α -Carbon of Carbonyl Compounds

1-75, 77-84, 87 (Tutorial pages 854-866)

EXAM 3**November 11, 2020****8:00-9:00 pm Gradescope**

Chapter 18 – Reactions of Benzene and Substituted Benzenes

1-66, 70-88, 90-106

Chapter 19 – More About Amines • Heterocyclic Compounds

1-42, 44

EXAM 4**December 2, 2020****8:00-9:00 pm Gradescope****FINAL EXAM****Monday December 14, 2020****7:00 – 10:00 PM****Chapter 20 – The Organic Chemistry of Carbohydrates (some overlap with BCMB)*****CH 8, 9 were not finished in CHEM 2211 Spring 2020/Summer 2020. Pending Fall 2020 coverage finishing as scheduled, Spring 2021 2212 return to beginning with CH 10 and cover CH 20.**

CHEM 2212 Learning Objectives

Upon successful completion of this course students will be able to:

- Describe and use reactions of alcohols, ethers, epoxides, amines and sulfur-containing compounds;
- Name carboxylic acids, carboxylic esters, acyl halides, carboxylic anhydrides, carboxylic amides, aldehydes and ketones using common and systematic nomenclature protocols;
- Write nucleophilic acyl substitution reactions and predict their reaction products for carboxylic acids, carboxylic esters, acyl halides, carboxylic anhydrides, and carboxylic amides;
- Write nucleophilic acyl addition reactions and predict their reaction products for aldehydes and ketones;
- Write mechanisms for nucleophilic acyl substitution and nucleophilic addition reactions using the curved arrow formalism;
- Devise brief synthetic transformations for nucleophilic acyl substitution and nucleophilic acyl addition reactions that also include synthetic strategies using electrophilic additions, radical reactions, organometallic reagents, and functional group interconversions;
- Write substitution reactions that occur at the α -carbon;
- Write the aldol reaction, the Claisen condensation, the Dieckmann condensation, the Robinson annulation, the malonic ester synthesis and the acetoacetic ester synthesis and use these α -carbon reactions in brief organic synthetic transformations;
- Describe basic biological reactions that utilize the aldol addition, the Claisen condensation, and decarboxylation;
- Name benzene derivatives using common and systematic nomenclature protocols;
- Write electrophilic aromatic substitution reactions for benzene and substituted benzenes and describe them mechanistically using the curved arrow formalism;
- Devise brief synthetic transformations using electrophilic aromatic substitution reactions that also include nucleophilic acyl substitution, nucleophilic acyl addition reactions and synthetic strategies using electrophilic additions, radical reactions, organometallic reagents, and functional group interconversions;
- Identify nucleophilic aromatic substitution reactions and write their mechanisms using the curved arrow formalism;
- Recognize and write reactions for amines and heterocyclic compounds;
- Name common monosaccharides, disaccharides, oligosaccharides and polysaccharides using common and systemic nomenclature protocols;
- Draw structures for carbohydrates using Fischer projections, cyclic Haworth projections, and chair conformations;
- Describe and write common reactions for carbohydrates including epimerization, reduction, oxidation, chain-shortening, chain-lengthening, glycoside and disaccharide formation;
- Identify carbohydrates in common biological compounds such as sucrose, starches, cellulose, chitin, and vitamin C;
- Name and write structures for the most common naturally occurring amino acids;
- Calculate the isoelectric point for amino acids;
- Describe and use synthetic strategies for the formation of amino acids and proteins;
- Differentiate between the primary, secondary, tertiary and quaternary structures of proteins.

Note: The Learning Objectives are categorical in nature. Any material covered in class or referenced in the text is subject to examination and may not be expressly listed here

Coronavirus Information for Students

Face Coverings:

Effective July 15, 2020, the University of Georgia—along with all University System of Georgia (USG) institutions—requires all faculty, staff, students and visitors to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. Face covering use is in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Students seeking an accommodation related to face coverings should contact Disability Services at <https://drc.uga.edu/>.

DawgCheck:

Please perform a quick symptom check each weekday on DawgCheck—on the UGA app or website—whether you feel sick or not. It will help health providers monitor the health situation on campus: <https://dawgcheck.uga.edu/>

What do I do if I have symptoms?

Students showing symptoms should self-isolate and schedule an appointment with the University Health Center by calling 706-542-1162 (Monday-Friday, 8 a.m.-5 p.m.). Please DO NOT walk-in. For emergencies and after-hours care, see <https://www.uhs.uga.edu/info/emergencies>.

What do I do if I am notified that I have been exposed?

Students who learn they have been directly exposed to COVID-19 but are not showing symptoms should self-quarantine for 14 days consistent with Department of Public Health (DPH) and Centers for Disease Control and Prevention (CDC) guidelines. Please correspond with your instructor via email, with a cc: to Student Care & Outreach at sco@uga.edu, to coordinate continuing your coursework while self-quarantined. If you develop symptoms, you should contact the University Health Center to make an appointment to be tested. You should continue to monitor your symptoms daily on DawgCheck.

How do I get a test?

Students who are demonstrating symptoms of COVID-19 should call the University Health Center. UHC is offering testing by appointment for students; appointments may be booked by calling 706-542-1162.

UGA will also be recruiting asymptomatic students to participate in surveillance tests. Students living in residence halls, Greek housing and off-campus apartment complexes are encouraged to participate.

What do I do if I test positive?

Any student with a positive COVID-19 test is **required** to report the test in DawgCheck and should self-isolate immediately. Students should not attend classes in-person until the isolation period is completed. Once you report the positive test through DawgCheck, UGA Student Care and Outreach will follow up with you.

Mental Health and Wellness Resources:

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking mental health services (<https://www.uhs.uga.edu/bewelluga/bewelluga>) or crisis support (<https://www.uhs.uga.edu/info/emergencies>).
- If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (<https://www.uhs.uga.edu/bewelluga/bewelluga>) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
- Additional resources can be accessed through the UGA App.