

GRAYSON COUNTY COLLEGE

Course Syllabus

CHEM 2325 and CHEM 2125 Organic Chemistry 2 with lab

Spring 16 week term

Professor Contact Information

Instructor: Dr. Jane Johnson-Carr

Email: carrj@grayson.edu

Office Location: S205A

Office Hours: by appointment

Office Phone: 903-463-8668

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites: Successful completion with a grade of C or better in CHEM2323/2123 or CHEM 2423 required. College readiness in reading required.

Course Description – from college catalog

Study of the properties and behavior of hydrocarbon compounds and their derivatives. Designed for students in science or pre-professional programs. Topics covered include chemical nomenclature, reaction mechanisms, stereochemistry, chemical bonding, kinetics and thermodynamics of organic reactions, interpretation of IR, ¹HNMR, ¹³CNMR, and MASS spectra, and organic synthesis. The student is expected to apply this information with some skill to convert existing molecules into desired ones through organic synthesis. Biochemistry is introduced. The laboratory portion provides an introductory level knowledge of organic synthesis. The student should develop competency to 1) perform simple organic syntheses, 2) purify and characterize products isolated from such experiments, and 3) understand simple mechanisms by which reactants were transformed to products. Multi-step syntheses are introduced. (RW)

Student Learning Outcomes

Upon successful completion of this course, students will

1. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules
 2. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials
 3. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships
 4. Describe reaction mechanisms in terms of energetics, reaction kinetics and thermodynamics
 5. Use spectroscopic techniques to characterize organic molecules and subgroups
 - L1. Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
 - L2. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as glassware and analytical instruments to collect and analyze data.
 - L3. Communicate effectively the results of investigations.
 - L4. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules
 - L5. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials
 - L6. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships
 - L7. Describe reactions mechanisms in terms of energetics, reaction kinetics and thermodynamics
 - L8. Use spectroscopic techniques to characterize organic molecules and subgroups.
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Required Textbooks (ISBN # included) and Materials

Organic Chemistry (Loose Leaf with ConnectPlus Access), Carey and Giuliano, 11th edition, McGraw Hill

ISBN: 1260699064 or 1260699072

Students **must** obtain Connect Access. **Connect Access includes a free digital copy of the textbook**

The Student's Lab Companion: Laboratory Techniques for Organic Chemistry, John W. Lehman, Pearson/Prentice Hall,

ISBN 978-0-13-159381-7

Safety Goggles

Canvas Access to lab report procedures

Carbon-less copy lab notebook (1 will be provided per semester)

Required Assignments & Academic Calendar

In case of inclement weather, emergency closings, or other unforeseen disruptions to scheduled classes, student must log onto their Canvas accounts for directions on where or how to continue their coursework.

	Week of	M	Homework	Quizzes	Experiment (Reading)
1		Chap 11	11.34, 11.38, 11.40, 11.44, 11.48, 11.49 Diels Alder PS Cope/Claisen PS	Q11-1 VQ 11	#1 Fluorescein synthesis
2		Chap 12.1-12.8	12.20, 12.41, 12.42	Q11-2 Q12-1	NO LAB (MLK Holiday)
3		Chap 12	Aromaticity PS	VQ 12 Exam 1	#2 Diels-Alder Synthesis
4		Chap 13	12.61, 13.36 Aromatic Rxns #1 PS	Q12-2	#3 Nitration of Methyl Benzoate
5		Chap 13	13.51, 13.52, Aromatic Rxns #2 PS	Q13	#4 Synthesis of Dilantin
6		Chap 15	15. 22, Organometallic Reagents PS Organometallic Rxns PS	Q15-1 Q15-2	#5 Grignard Synthesis
7		Chap 15	Metallic and Benzene Review PS	Exam 2	#6 Friedel Crafts Acylation
8		Chap 16	16.22, 16.23, 16.24, 16.26 Alcohol Rxn PS Fisher Esterification PS	Q16 Q14	#6B Chromatographic Separation (p. 120-130)
SPRING BREAK					
9		Chap 17	17.26, 17.32, 17.37, Ether PS	Q17	#7 Fisher Esterification
10		Chap 18	Carbonyl PS	Exam 3	#8 Hydrobenzoin Reduction
11		Chap 18	18.27, 18.32 Wittig PS	Q18-1 Q18-2	#9 Hypochlorite Oxidation
12		Chap 19	19.18, 19.22, 19.26, Carboxylic Acid PS	Q19	#10 Oxidation by Potassium Permanganate
13		Chap 20	20.31, 21.36, 21.37, 21.40, 21.47 Acid Derivatives PS	Q20	#11 Aldol Condensation
14		Chap 21	22.35, 22.36, 22.38, Aldol Condensation PS Enolate Alkylations PS	Q21	#12 Reductive Acylation
15		Chap 22	Retro Aldol PS	Q22 Exam 4	Laboratory Exam
16		Final Exam during Class Meeting Time			

Methods of Evaluation

Lecture Exams

Five (5) exams will be administered throughout the semester relating to the lecture portion of the course. *The 4 Unit Exams will be taken in the testing center on the main campus. The student is responsible for arranging to take the exam during the testing window.* All exams will be cumulative throughout the course and will consist of multiple choice and short answer questions. The Final Exam is required and will be administered during class time during finals week. If the final exam is higher than the lowest previous exam grade, it may be used to replace that lowest exam grade.

One (1) exam will be given at the end of the laboratory portion of the course. This exam will consist of questions primarily related to laboratory procedures and calculations and may not be replaced by the lecture final.

There are no makeup exams! If you know you will be unable to take a test during the assigned time, contact me **PRIOR** to the test to make arrangements to take the test at another time. Decisions concerning alternative testing times are strictly the discretion of the professor.

Students must bring a scantron to every exam. Exam grades will be posted on Canvas. Students may view their exams after grading, but the instructor will keep all exams and scantrons.

Success in chemistry is strongly linked to completing homework and reading assignments. Homework problems and in-class work sets will be factored into an overall homework grade, which will be equal to a unit exam grade in value. Homework assignments will be collected at each unit exam. Connect quizzes must be completed weekly; typically, by Sunday at 11:59 pm and will also be equal to an exam grade. Extensions on assignments are at the discretion of the instructor. A 10 % per day late penalty will be assessed on homework, problem sets, and quizzes not completed on time.

Laboratory Reports

Weekly lab report grades will be averaged together and will be equivalent to 2 exam grades

The points allotted to each laboratory report is as follows:

Pre-Lab Assignment	20 pts
Actual Lab work	50 pts.
Discussion Questions	30pts

Each student must have and maintain a proper laboratory notebook. If a student does not have their notebook with them, they will not be permitted to complete the experiment.

PRIOR TO COMING TO LAB, for each experiment, the student must complete a purpose statement and a table of chemical information. During the experiment, procedural details and experimental results must be recorded directly into the lab notebook **IN PERMANENT BLUE OR BLACK INK**.

Laboratory reports are to be handed in at the end of beginning of the next lab period, unless specified otherwise by the instructor. **EACH STUDENT MUST TURN IN HIS/HER OWN INDIVIDUAL REPORT.** A penalty of at 10 points per week will be assessed to lab reports turned in late. Lab reports will be returned to the student in a timely manner.

A student must earn an average grade of at least 50% on lab reports to receive a passing grade for CHEM 2323/2123. If a student's lab report average is below 50 %, they will receive an F grade for the entire course, regardless of the actual course grade calculated below.

One final exam will be given. Students must bring a scantron and calculator to this exam. Cell phones may not be used as calculators. If a graphing calculator is used, the memory must be cleared prior to the exam.

To determine student's final grade:

If the final exam grade is greater than any lecture exam grade

1. Add up points earned on 3 highest scoring lecture exams
2. Add the final exam grade x 2
3. Add the points earned on the laboratory final
4. Add the average points earned on weekly lab reports x 2
5. Add the percentage of points earned on homework and classwork (points will be posted in Canvas)
6. Add the percentage of points earned on quizzes (points will be posted in Canvas)
7. See chart below

If the final exam grade is the lowest exam grade

1. Add up points earned on all 4 lecture exams
2. Add the final exam grade
3. Add the points earned on the laboratory final
4. Add the average points earned on weekly lab reports x 2
5. Add the percentage of points earned on homework and classwork (points will be posted in Canvas)
6. Add the percentage of points earned on quizzes (points will be posted in Canvas)
7. See chart below

Final Grade

Grades are based on total points earned. Percentages are for comparison purposes only

<u>percent</u>	<u>Points earned</u>	<u>Letter grade</u>
90-100%	900-1000	A
80-89%	800-899	B
70-79%	700-799	C
60-69%	600-699	D
<60%	<599 pts or < 50 % in lab	F

Methods of Instruction

Lecture: On-line with video instruction

Lab: Face-to-Face course involving hands-on experimentation 3 hrs/week on campus, Students will work individually to complete laboratory experiments

Testing conducted on campus in Testing Center. Use link in Canvas to schedule testing appointments.

Course & Instructor Policies

Students, who drop the Chemistry 2325 lecture course, must also withdraw from the Chemistry 2125 lab course.

Laboratory Safety Policies:

Chemical splash goggles must be worn in the chemistry laboratory anytime chemicals, glassware or heat are used. **NO EXCEPTIONS.** Safety "glasses" are not acceptable. This includes during lab cleanup or when any group, regardless of location, is still conducting an experiment. Students will be given only 1 warning during a laboratory period. If the student is caught without goggles later in the period, they will be dismissed from the lab and receive a grade of 0 for the experiment.

Students are not allowed to wear flip-flops, sandals or open toed shoes in the laboratory. Shoes must cover the top of the foot. Students without proper footwear will be sent home to change. Students will not be given extra time to complete labs due to coming in inappropriate footwear.

It is strongly recommended that students wear long pants or long skirts and refrain from shorts and short skirts. Laboratory coats and aprons are permitted, but will not be provided.

Students with long hair are encouraged to pull their hair back or put it up. Loose hair can be a serious hazard.

Although “accidents” do happen in the laboratory, glassware breakage is generally preventable. If laboratory equipment is damaged or broken due to carelessness, the student will be charged up to 10 points from the final course grade for each item broken or damaged.

In order to protect our local water supply, students are required to follow all chemical waste disposal guidelines given by the instructor. Failure to comply with proper waste disposal will result in a 10 point penalty for each infraction.

Class Attendance

Academic success is closely associated with regular classroom attendance and course participation. Any student missing more than 20% of the class meetings (more than 5 absences) or excessively tardy to lecture or lab (routinely more than 10 minutes late) will have their final class grade lowered by 1 letter grade. Any student missing more than 50 % of class meetings (14 or more absences) will receive an automatic F grade, regardless of actual earned grade.

All successful students, whether on campus or online, are expected to be highly self-motivated.

All students are required to participate in courses regularly and are obliged to participate in class activities and complete and submit assignments following their professors’ instructions. Students taking courses during compressed semester time frames such as mini-mester, summer sessions, and mid-semester should plan to spend significantly more time per week on the course. Responsibility for work missed because of illness or school business is placed upon the student. More than two (2) absences are considered to be excessive. In addition, students’ eligibility to receive financial aid or live in a College dormitory can be affected by withdrawal from courses. When withdrawal occurs, any tuition refund would be made in accordance with state regulations.

STUDENTS ARE REQUIRED TO ATTEND THE LABORATORY SESSION THEY ARE ENROLLED IN. If a student must be unavoidably absent from lab, they must secure permission **IN ADVANCE** from the instructor to make up the lab at another time. Unexcused absences will receive a grade of 0 for the experiment. Decisions concerning alternative laboratory times are strictly the discretion of the instructor.

Student Conduct & Discipline

All cell phones and other electronic devices must be turned off or to silent before entering the classroom. Texting during class means you are not paying attention and is unacceptable behavior. Cell phones may be used during class for legitimate educational purposes (accessing periodic tables or other chemistry apps)

Students may use laptop computers or tablets during class but are expected to be using them for chemistry classwork only. Students using laptops for other purposes will be asked to turn them off or leave the classroom.

Student Responsibility

You have already made the decision to go to college; now the follow-up decisions on whether to commit to doing the work could very well determine whether you end up working at a good paying job in a field you enjoy or working at minimum wage for the rest of your life. Education involves a partnership that requires both students and instructors to do their parts. By entering into this partnership, you have a responsibility to show up for class, do the assignments and reading, be engaged and pay attention in class, follow directions, and put your best effort into it. You will get out of your experience here exactly what you put into it – nothing more and nothing less.

TITLE IX

GC policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status. Furthermore, Title IX prohibits sex discrimination to include sexual misconduct: sexual violence (sexual assault, rape), sexual harassment and retaliation.

For more information on Title IX, please contact:

- Dr. Regina Organ, Title IX Coordinator +)
 - Dr. Dava Washburn, Title IX Coordinator (903-463-8634)
 - Dr. Kim Williams, Title IX Deputy Coordinator- South Campus (903) 415-2506
 - Mr. Mike McBrayer, Title IX Deputy Coordinator (903) 463-8753
 - Ms. Marilyn Power, Title IX Deputy Coordinator (903) 463-8625
 - Website: <http://www.grayson.edu/campus-life/campus-police/title-ix-policies.html>
 - GC Police Department: (903) 463-8777 Main Campus
(903) 415-2501 South Campus
 - GC Counseling Center: (903) 463-8730
 - For Any On-campus Emergencies: 911
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Grayson County College is not responsible for illness/injury that occurs during the normal course of classroom/lab/clinical experiences.

These descriptions and timelines are subject to change at the discretion of the Professor.

Grayson College campus-wide student policies may be found at the Current Student link on the Grayson Website
<http://grayson.edu/current-students/index.html>