



**CHEM 2425.101CL**  
**Organic Chemistry 2**  
**Spring 2024**

**Tuesdays & Thursdays from 8:00 AM – 11:20 AM in STEAM 401**

**Instructor Information:** Luke Turner | [lturner16@com.edu](mailto:lturner16@com.edu) | 832-352-6222

**Student hours and location:**

<b>Monday</b>	08:00 – 10:30	STEAM 325-23 & Virtual
<b>Tuesday</b>	11:30 – 12:15	STEAM 325-23 & Virtual
<b>Wednesday</b>	08:00 – 10:30	STEAM 325-23 & Virtual
<b>Thursday</b>	11:30 – 12:15   13:30 – 14:30	STEAM 325-23 & Virtual
<b>Friday   Saturday   Sunday</b>	**Virtual Office Hours by Appointment**	

**Required Textbook/Materials:** Links to the free online textbook and other open educational resources will be provided in the course materials in D2L Brightspace. Additionally, links to the [Aktiv Learning](#) homework system and [Beyond Labz](#) virtual laboratory activities (including enrollment instructions) will be accessible in D2L Brightspace (D2L) at the start of the semester.

**Required Textbook:** Solderberg, T. [Organic Chemistry with a Biological Emphasis Volume I](#) [Online]; Chemistry Publications, 2019. [[https://digitalcommons.morris.umn.edu/chem\\_facpubs/1](https://digitalcommons.morris.umn.edu/chem_facpubs/1)]

**Supplemental Textbook:** Reusch, W. [Virtual Text of Organic Chemistry](#) [Online]; Creative Commons, 2010. [Creative Commons License CC BY-NC-SA 4.0]

**Course Description:** Access link to catalog course description: <http://tinyurl.com/mr3ckcb6>

**Course Requirements:** Apart from completing **6** of **8** scheduled exams and 70% of the lab experiments, all other forms of assessment are completely optional, unless otherwise indicated. If you complete all (**8**) exams, the lowest (**2**) scores will be dropped. Two missed exams will be dropped, but additional missed exams will require completion of a comprehensive final exam. Occasionally, pop quizzes may be administered during class and will be included in the overall grade calculation. The scoring of these quizzes is meant to encourage good study habits, note-taking and engagement with class activities.

Assessment	Approximate Point Value	Overall Average	Grade
6 Exams	600 pts	≥89.5%	A
Class Activities*	} 0 - 200 pts	79.5-89.4%	B
Quizzes*		69.5-79.4%	C
Homework*		59.5-69.4%	D
Lab (Drop Lowest 3)	100 - 150 pts	≤59.5%	F

\*Optional components; no penalty for missed assignments or incomplete submissions unless otherwise indicated at the time of administration.

**Other grade assignments:**

- **FN** —assigned at the discretion of the instructor in accordance with college policy.
- **I** — “*incomplete*” assigned at the discretion of the instructor in accordance with college policy.
- **W** — “*withdrawal*” assigned in accordance with college policy.

**Late Work, Make-Up, and Extra-Credit Policy:** Since this course is designed with a significant portion of content that is optional and penalty-free with flexible deadlines, no make-up or extra credit assignments will be offered. Two (2) missed exams will be dropped from the total, and a comprehensive final exam will be taken if more than two (2) exams are missed.

**Attendance Policy:** Generally, the attendance policies prescribed in the current College Catalog (<http://tinyurl.com/43vjb8sx>) will be applied as far as Census Day reporting is concerned.

**Communicating with your instructor:** If you need to reach me, I am available by email ([lturner16@com.edu](mailto:lturner16@com.edu)) and phone (call or text me at 832.352.6222). ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means.

<b>Student Learner Outcome</b>	<b>Maps to Core Objective</b>	<b>Assessment(s)</b>
1. Outline the reaction mechanisms that illustrate the process by which organometallic reagents can be transformed.	Critical Thinking	Selected Exam Questions
2. Illustrate typical reactions of organometallic reagents.	Critical Thinking Communication Skills	Selected Exam Questions Presentation
3. Construct plausible synthetic sequences for the preparation and transformation of organometallic reagents from appropriate starting materials.	Critical Thinking	Selected Exam Questions
4. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of aldehydes and ketones.	Critical Thinking	Selected Exam Questions
5. Draw the “keto” and “enol” forms of aldehydes and ketones.	Critical Thinking	Selected Exam Questions
6. Outline the mechanism that illustrates the interconversion between keto-enol tautomers.	Empirical and Quantitative Skills	Selected Exam Questions
7. Predict which tautomeric form of aldehydes and ketones is predominant.	Critical Thinking	Selected Exam Questions
8. Outline the reaction mechanisms that illustrate the process by which aldehydes and ketones can be prepared and transformed.	Critical Thinking	Selected Exam Questions
9. Illustrate typical reactions of aldehydes and ketones.	Critical Thinking	Selected Exam Questions
10. Construct plausible synthetic sequences for the preparation and transformation of aldehydes and ketones from appropriate starting materials.	Critical Thinking	Selected Exam Questions
11. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of carboxylic acids and their derivatives.	Empirical and Quantitative Skills	Selected Exam Questions
12. Predict physical properties and reactivity of carboxylic acids and their derivatives.	Critical Thinking	Selected Exam Questions
13. Outline the reaction mechanisms that illustrate the process by which carboxylic acids and their derivatives can be prepared and transformed.	Empirical and Quantitative Skills	Selected Exam Questions
14. Illustrate typical reactions of carboxylic acids and their derivatives.	Team Work	Selected Experiment Grades
15. Construct plausible synthetic sequences for the preparation and transformation of carboxylic acids and their derivatives from appropriate starting materials.	Critical Thinking	Selected Experiment Grades
16. Predict the physical properties and reactivity of compounds containing $\alpha$ -acidic hydrogens and active methylenes.	Team Work	Selected Experiment Grades
17. Predict the physical properties and reactivity of compounds containing $\alpha$ -acidic hydrogens and active methylenes.	Empirical and Quantitative Skills	Selected Experiment Grades
18. Outline the reaction mechanisms that illustrate the process by which compounds containing $\alpha$ -acidic hydrogens and active methylenes can be prepared and transformed.	Empirical and Quantitative Skills	Selected Experiment Grades
19. Illustrate typical reactions of compounds containing $\alpha$ -acidic hydrogens and active methylenes.	Critical Thinking	Selected Experiment Grades
20. Construct plausible synthetic sequences for the preparation and transformation of compounds containing $\alpha$ -acidic hydrogens and active methylenes from appropriate starting materials.	Communication Skills	Laboratory Report Grade
21. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of amines.	Communication Skills	Selected Exam Questions

<b>Student Learner Outcome</b>	<b>Maps to Core Objective</b>	<b>Assessment(s)</b>
22. Predict the physical properties and reactivity of amines.	Critical Thinking	Selected Exam Questions
23. Outline the reaction mechanisms that illustrate the process by which amines can be prepared and transformed.	Critical Thinking Communication Skills	Selected Exam Questions Presentation
24. Illustrate typical reactions of amines.	Critical Thinking	Selected Exam Questions
25. Construct plausible synthetic sequences for the preparation and transformation of amines from appropriate starting materials.	Critical Thinking	Selected Exam Questions
26. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of phenols.	Critical Thinking	Selected Exam Questions
27. Predict the physical properties and reactivity of phenols.	Empirical and Quantitative Skills	Selected Exam Questions
28. Outline the reaction mechanisms that illustrate the process by which phenols can be prepared and transformed.	Critical Thinking	Selected Exam Questions
29. Outline the reaction mechanisms that illustrate the process by which phenols can be prepared and transformed.	Critical Thinking	Selected Exam Questions
30. Illustrate typical reactions of phenols.	Critical Thinking	Selected Exam Questions
31. Construct plausible synthetic sequences for the preparation and transformation of phenols from appropriate starting materials.	Critical Thinking	Selected Exam Questions
32. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of aryl halides.	Empirical and Quantitative Skills	Selected Exam Questions
33. Predict physical properties and reactivity of aryl halides.	Critical Thinking	Selected Exam Questions
34. Outline the reaction mechanisms that illustrate the process by which aryl halides can be prepared and transformed.	Empirical and Quantitative Skills	Selected Exam Questions
35. State the differences and similarities between the types of reactions, their mechanisms and reaction intermediates that alkyl and aryl halides undergo.	Empirical and Quantitative Skills	Selected Exam Questions
36. Illustrate typical reactions of aryl halides.	Team Work	Selected Experiment Grades
37. Construct plausible synthetic sequences for the preparation and transformation of aryl halides.	Critical Thinking	Selected Experiment Grades
38. Predict the physical properties and reactivity of compounds containing $\alpha$ -acidic hydrogens and active methylenes.	Team Work	Selected Experiment Grades
39. Predict the physical properties and reactivity of $\alpha,\beta$ -unsaturated carbonyls.	Empirical and Quantitative Skills	Selected Experiment Grades
40. Outline the reaction mechanisms that illustrate the process by which $\alpha,\beta$ -unsaturated carbonyls can be prepared and transformed.	Empirical and Quantitative Skills	Selected Experiment Grades
41. Illustrate typical reactions of $\alpha,\beta$ -unsaturated carbonyls.	Critical Thinking	Selected Experiment Grades
42. Construct plausible synthetic sequences for the preparation and transformation of $\alpha,\beta$ -unsaturated carbonyls from appropriate starting materials.	Communication Skills	Laboratory Report Grade
43. Apply the International Union of Pure and Applied Chemistry (IUPAC) rules to name and draw the structure of aromatic compounds.	Critical Thinking	Selected Exam Questions
44. Predict whether a substance is expected to be aromatic, anti-aromatic or non-aromatic.	Critical Thinking	Selected Exam Questions
45. Predict physical properties and reactivity of aromatic compounds.	Critical Thinking	Selected Exam Questions

<b>Student Learner Outcome</b>	<b>Maps to Core Objective</b>	<b>Assessment(s)</b>
46. Predict the effect that electron donating and electron-withdrawing groups have on the acidity and pKa of aromatic acids, such as: benzoic acids, phenols, and anilinium ions.	Critical Thinking	Selected Exam Questions
47. Construct Frost Circle Molecular Orbital (MO) diagrams to ascertain the stability of monocyclic conjugated systems.	Critical Thinking Communication Skills	Selected Exam Questions Presentation
48. Outline the reaction mechanisms that illustrate the process by which electrophilic aromatic substitution reactions occur.	Critical Thinking	Selected Exam Questions
49. Illustrate typical reactions of aromatic compounds.	Critical Thinking	Selected Exam Questions
50. Construct plausible synthetic sequences for the preparation and transformation of aromatic compounds from appropriate starting materials.	Critical Thinking	Selected Exam Questions
51. Apply the theory of UV-Vis spectroscopy, including electronic transitions and the effect of conjugation on wavelength and molar absorptivity to characterize organic compounds by means of UV-Vis spectra.	Empirical and Quantitative Skills	Selected Exam Questions
52. Predict IR spectra of organic compounds by considering vibrational motions, the identification of functional groups, and the effects of conjugation and ring strain.	Critical Thinking	Selected Exam Questions
53. Outline pulsed Fourier-transform proton and carbon NMR spectroscopy including the significance of the number of signals, chemical shift, integration, scalar coupling, the effects of chemical exchange and temperature, broadband decoupling, DEPT spectroscopy (Distortionless Enhancement by Polarization Transfer) and 2-D NMR.	Critical Thinking	Selected Exam Questions
54. Illustrate typical fragmentation patterns in mass spectrometry including the information revealed by the molecular ion peak and the base peak.	Critical Thinking	Selected Exam Questions
55. Construct plausible chemical structures by combining information from UV-Vis spectra, IR spectra, mass spectra and NMR spectra.	Critical Thinking	Selected Exam Questions

**Academic Dishonesty:** Any incident of academic dishonesty will be dealt with in accordance with college policy and the Student Handbook (<http://tinyurl.com/v8yeztjp>).

**Student Concerns:** If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact Ms. Sheena Abernathy, Science Department Chair, at 409-933-8330/[sabernathy@com.edu](mailto:sabernathy@com.edu).

**Tentative Course outline:** The course schedule will be updated weekly in D2L and should be your primary resource for accessing learning materials and class scheduling. A *tentative* outline is tabulated below:

Weeks	Topics	Exam Date
1-2	Structure, Reactivity & Nomenclature of Alcohols	01.25.24
3-5	Structure, Reactivity & Nomenclature of Aldehydes & Ketones	02.08.24
5-7	Structure, Reactivity & Nomenclature of Carboxylic Acids & Derivatives	02.22.24
8-10	Structure & Reactivity of $\alpha$ -Acidic Hydrogens & Activated Methylens	03.07.24
10-12	Structure, Reactivity & Nomenclature of Amines & Phenols	03.28.24
12-14	Structure, Composition & Reactivity of $\alpha,\beta$ -Unsaturated Carbonyls	04.11.24
14-15	Structure, Reactivity and Nomenclature of Aromatic Compounds	04.25.24
15-16	Instrumental Techniques: NMR, IR & UV-Vis Spectroscopy	05.07.24

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## Institutional Policies and Guidelines

**Grade Appeal Process:** Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook [https://www.com.edu/student-services/docs/Student\\_Handbook\\_2023-2024\\_v2.pdf](https://www.com.edu/student-services/docs/Student_Handbook_2023-2024_v2.pdf). *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.*

**Academic Success & Support Services:** College of the Mainland is committed to providing students the necessary support and tools for success in their college careers. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

**ADA Statement:** Any student with a documented disability needing academic accommodations is requested to contact Kimberly Lachney at 409-933-8919 or [klachney@com.edu](mailto:klachney@com.edu). The Office of Services for Students with Disabilities is located in the Student Success Center.

**Textbook Purchasing Statement:** A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

**Withdrawal Policy:** Students may withdraw from this course for any reason prior to the last eligible day for a “W” grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The last date to withdraw from the 1<sup>st</sup> 8-week session is February 28. The last date to withdraw from the 16-week session is April 22. The last date to withdraw for the 2<sup>nd</sup> 8-week session is May 1. The last date to withdraw for spring mini session is May 29.

**FN Grading:** The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN grade.

**Early Alert Program:** The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

**Resources to Help with Stress:**

If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here <https://www.com.edu/community-resource-center/>. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at [deanofstudents@com.edu](mailto:deanofstudents@com.edu) or [communityresources@com.edu](mailto:communityresources@com.edu).