

# Hudson County Community College

## Organic Chemistry II, CHP 230

**Course:**

**Course Title:** Organic Chemistry II

**Credit:** 4

**Instructor:**

**Day(s) and Time (s):**

**Location**

**Office Hours:**

(by appointment)

**Office Location:**

**Email:**

**Course Description:** This is the second of a two-course sequence of introductory organic chemistry. The physical and chemical properties of organic compounds, including aliphatics, alicyclics, and aromatics are studied through an examination of their structure, preparation, reactivity, and spectral properties. The study of organic functionality centers in the hydroxyl and carbonyl groups. The laboratory component includes separation and purification techniques and other synthetic procedures.

**Lab:** You MAY NOT make-up a lab experiment missed. Five lab reports will be graded. Lab reports may not be hand written. Lab reports should be submitted individually.

Each lab report must have:

- Cover page which includes: The experiment name.
- Introduction/ Background
- Data and calculation (submit the page from your lab manual)
- Conclusion

**Homework:** Homework assignments are given every week.

**Research Paper:** A 3 to 5 page paper APA or MLA style with at least three Reference. At least one reference should be a paper. In other words you Dec NOT have all citations as http or www. You Dec only choose from the following topics: Renewable Energy, Bio-fuels, Green Technology, Recycling, Hybrid cars, Wind farming, Pollution Prevention, Environmental Issues etc.

**Course Prerequisite:** CHP - 225

### **Student Learning**

**Outcome:** Upon completion of this course, student will be able to:

1. Give names and formulas of aliphatic and aromatic compounds.
2. Make clear characteristic properties of each functional group.
3. Realize that a bifunctional molecule will modify each individual functionality as well.
4. Comprehend four additional (seven learned from Organic Chemistry-I) reaction mechanisms: electrophilic aromatic substitution, nucleophilic addition, nucleophilic acyl substitution, and nucleophilic aromatic substitution.
5. Familiarize with how free-radicals, carbocations, and carbanions are stabilized by charge dispersal and molecular rearrangement.
6. Discuss how resonance dictates reaction orientations in aromatic and conjugated systems.
7. Discuss how electron withdrawing/releasing groups (de)activate aromatic substitution.
8. Apply Lewis concept of acid-base to organic reactions.
9. Apply Lowry-Bronsted concept of acid-base to equilibria between carboxylic acid, amine, and phenol with their salts.
10. Relate occurrence of reaction mechanism to functional group as follows: Free-radical substitution: alkane. Free-radical addition: alkene. Electrophilic aromatic substitution: aromatic ring. Electrophilic addition: alkene, alkyne,  $\alpha$ ,  $\beta$ -unsaturated carbonyls. Nucleophilic substitutions, SN1/SN2: alkyl halide, alcohol, ether, amine. Nucleophilic acyl substitution: carboxylic acid, acid derivatives, amine. Nucleophilic aromatic substitution: aryl halide. Nucleophilic addition: aldehyde, ketone,  $\alpha$ ,  $\beta$  - unsaturated carbonyls. Eliminations, E1/E2: alkyl halide, alcohol, amine.
11. Outline steps in a possible synthesis of an organic compound.
12. Correlate ir and nmr spectra with various changes in atom arrangements in a molecule.
13. Identify a compound and determine its structure by chemical test and spectroscopic analysis.
14. Gain more basic techniques to work on organic synthesis, reaction, and identification.
15. Better a formal organic lab report.

**Text Book:** “Organic Chemistry” 9<sup>th</sup> Edition, Cengage Learning Publishing

**Author(s):** John McMurry

**ISBN-13:** 978-1-305-08211-3

*Lab Manual specific to CHP-225 (available at book store)*

**Book Purchase:** Since we use the book and lab manual extensively in and out of the class, you must buy them before our second meeting. In case you need to wait for the book voucher, it is your responsibility to find a way to make copies of the readings assigned from the books. Any student who has true financial need is eligible to apply for a book scholarship through the Office of the Dean of Students located at 70 Sip Avenue.

**Attendance:** The college policy is generally that a student Dec fail a course due to lack of attendance if s/he missed more than 6 hours of instructional time for a 3-credit course.

<b>Grading Policy:</b>	Three exams	75 points
	Quizzes	5 points
	Lab	5 points
	Home Works	5 points
	Presentation	5 points
	Class Participation	5 points

You are required to attend all classes even if you get A in first two tests.

**Breakdown of Grading:**

100 - 94 = A	69 - 64 = C+
93 - 90 = A-	63 - 54 = C
89 - 84 = B+	53 - 50 = D
83 - 75 = B	Below 50 = F
74 - 70 = B-	

**Safety in the Lab: and Classroom**

Students are required to read the laboratory safety rules, ask any question they Dec have, sign and return the bottom part of safety rule sheet.

- **ALL SOCIAL DISTANCING RULES MUST BE FOLLOWED.**
- **YOU MUST WEAR A MASK when in the laboratory room. You will be asked to leave the lab if you are caught not wearing a mask. NO EXCEPTIONS.**
- **NO EATING or DRINKING in the lab.**

This includes having a closed soda, or juice, or coffee, or tea, or water on the desk while we are in the chemistry lab.

- **YOU MUST WEAR SAFETY GOGGLES** when conducting experiments in the lab.

**Cell Phone Use Policy:**

Cell phones should be on manner mode. In case of emergency, notify me and then leave. Leaving classroom for non-emergency calls will result a zero grade in one test. **NO texting during lectures or exams!** Cell phones Dec NOT be used during exams

**Mandatory Use of HCCC Email Address:**

Members of the HCCC community are required to check their official HCCC email address in order to stay current with College and course communications. All college business communication between faculty, students, and staff must be sent via an official HCCC email address. If an employer or student elects to forward or link his/her HCCC email to a separate and private account, that individual remains responsible for all material transmitted to that account. Employees of HCCC shall not be responsible for any material that remains undelivered, due to defects in the private non-HCCC accounts. Failure in the operations of private email accounts shall not be cause for excuse from communications between the students and the employee. Students that encounter difficulty with HCCC email should view the FAQ's section on the Portal.

**Incomplete:**

An INCOMPLETE grade for the course is given under specific conditions when a student, because of serious and unexpected reasons, cannot complete the requirements of the course. For example, if a student did not attend the final because of illness his or her excuse must be verified by a physician. Other absences from other assigned activities must be made up at another appointed time. To arrange for an incomplete grade, the student must see the instructor before final exam, so proper documentations could establish and submitted to Division and The office of Academic Affairs.

**Disability Support Services:**

Students with disabilities who believe that they might need accommodations in this class are encouraged to contact Disability Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or

Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student, and individual student.

## **Academic Integrity Standards:**

Academic integrity is central to pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students earn college credits by their honest efforts. When they are awarded a certificate or degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

### **Violations of the principals of academic integrity include:**

- Cheating on exams
- Reporting false research data or experimental results
- Allowing other students to copy one's work to submit to instructors
- Communicating the contents of an exam to other students who will be taking the same test
- Submitting the same project in more than one course, without discussing this first with instructor
- Submitting *plagiarized* work. *Plagiarism* is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use Dec be from published books or articles, the Internet, or another student's work.

### **Violation of Academic Integrity:**

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Student who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. In some cases, serious or repeated instances of academic integrity violations Dec warrant further disciplinary action.

Detailed information on the College's Academic Integrity policy Dec found in the *HCCC Student Handbook*. The handbook also contains useful information for students on completing research projects and avoiding plagiarism.

## **Classroom Recording Policy at HCCC**

### **Student Classroom Recording Policy**

- Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes Dec only be recorded with the advance written permission of the instructor. The Hudson County Community College classroom recording policy must be listed in all syllabi.
- All classroom recordings can only be used for academic purposes by students enrolled in that class. Recordings Dec not be shared, reproduced, or uploaded to public websites or other mediums, and these recordings Dec contain copyrighted material and are prohibited from any form of commercial use.
- All students and guests must be informed that the class Dec be recorded. Due to issues related to privacy and the possible inhibition of student participation, instructors should be mindful of the effects of permitting classroom recording.
- Instructors should retain electronic or paper copies of their written consent to grant classroom recordings.
- Students must destroy their recordings at the end of the semester.
- Students who are granted permission to record their class by the office of Disability Support Services should inform the instructor beforehand and are subject to the policies outlined in this document.
- Violation of this policy is subject to disciplinary action listed under the code of conduct as included in the Student Handbook.

### **Instructor Classroom Recording Policy**

- Instructors Dec record their classes if students are informed in writing in advance that recording will take place. Instructors Dec distribute their own lectures, but this must be limited to the lecture portion of the class. Recordings of student presentations or activities Dec be used in the class if the students are notified in advance of the recording. Recordings of student presentations or activities Dec not be distributed in any way without the advance written consent of the students.

Successful people access support from others when needed. Hudson County Community College has many supportive services available to help you meet your goals. You are encouraged to contact your instructors or other professionals on campus. Below are resources available to you.

**IN AN EMERGENCY, PLEASE CONTACT SECURITY or 911.**

	<b>Journal Square Campus</b>	<b>North Hudson Campus</b>
<b><u>Counseling Services</u></b> <a href="mailto:counseling@hccc.edu">counseling@hccc.edu</a>	201-360-4150 A Building, Floor 2 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>	201-360-4150 Enrollment Center, Floor 1 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>
<b>The National Suicide Prevention Lifeline: 1-800-273-8255</b> <b>Crisis Text Line: Text HELLO to 741-741</b>		
<b><u>Advising Services</u></b> <a href="mailto:advising@live.hccc.edu">advising@live.hccc.edu</a>	201-360-4150 A Building, Floor 2 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>	201-360-4150 Enrollment Center, Floor 1 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>
<b><u>Career Development</u></b> <a href="mailto:career@hccc.edu">career@hccc.edu</a>	201-360-4181 A Building, Floor 3 <a href="https://myhudson.hccc.edu/career-development">https://myhudson.hccc.edu/career-development</a>	201-360-4181 Floor 2, Room 204 <a href="https://myhudson.hccc.edu/career-development">https://myhudson.hccc.edu/career-development</a>
<b><u>Disability Support Services</u></b> <a href="mailto:dss@hccc.edu">dss@hccc.edu</a>	201-360-4157/4163 A Building, Floor 2 <a href="https://myhudson.hccc.edu/dss">https://myhudson.hccc.edu/dss</a>	201-360-4157/4163 Enrollment Services, Floor 1 <a href="https://myhudson.hccc.edu/dss">https://myhudson.hccc.edu/dss</a>
<b><u>Library</u></b> Journal Square <a href="mailto:librarian@hccc.edu">librarian@hccc.edu</a> North Hudson <a href="mailto:librarynhc@hccc.edu">librarynhc@hccc.edu</a>	201-360-4360 L Building, Floor 1 <a href="http://www.hccclibrary.net/">http://www.hccclibrary.net/</a>	201-360-4605 Floor 3 <a href="http://www.hccclibrary.net/">http://www.hccclibrary.net/</a>
<b><u>Tutoring Center</u></b> <a href="mailto:tc@hccc.edu">tc@hccc.edu</a>	201-360-4187 Lower Level of Library Building <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>	201-360-4623 Floor 5, Room 511 <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>
<b><u>Writing Center</u></b> <a href="mailto:wc@hccc.edu">wc@hccc.edu</a>	201-360-4370 J Building, Room 204 <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>	201-360-4779 Floor 7, Room 703A <a href="https://myhudson.hccc.edu/tutoring/">https://myhudson.hccc.edu/tutoring/</a>

## Organic Chemistry II (CHP 230)

### *Tentative Course Schedule*

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1. Introduction to the course, grading policy, course Requirements.  
  
Chapter 12: Structure Determination: *Mass Spectrometry and Infrared Spectroscopy*  
**Lab 1:** Spectrophotometer: Learn the Beer-Lambert Law with absorbance experiment
2. Chapter 13: Structure Determination: *Nuclear Magnetic Resonance Spectroscopy*  
**Lab 2:** Proton NMR: Spectrum Interpretation
3. Chapter 14: Structure Determination: *Conjugated Compounds and Ultraviolet Spectroscopy*  
**Lab 3:** Spectrophotometers: Building and Exploring the Instrument  
**Review Chapter 12, 13, 14**
4. **Exam 1**  
Chapter 15: Benzene and Aromaticity  
**Lab 4:** Organic Chemistry Introduction: Learn about organic compounds
5. Chapter 16: Chemistry of Benzene: *Electrophilic Aromatic Substitution*  
**Lab 5:** Organic Chemistry Reactivity Rules: Time to React
6. Chapter 17: Alcohols and Phenols  
**Lab 6:** Nucleophilic Substitution Reaction: Alkyl Halide Substrates
7. Chapter 18: Ethers and Epoxides: Thiols and Sulfides  
**Lab 7:** Elimination Reactions: Use cyclohexanol to create polymers  
**Review Chapter 15, 16, 17, 18**



8. **Exam 2**
9. Chapter 19: Aldehydes and Ketones:  
*Nucleophilic Addition Reactions*  
**Lab 8:** Electrophilic Addition - Explore reaction of Hydrocarbons  
**Lab 9:** Nucleophilic Addition: Explore the Grignard's Reaction
10. Chapter 20: Carboxylic Acids and Nitriles  
*Nucleophilic Acyl Substitution Reactions*
11. Chapter 21: Carboxylic Acid Derivatives:  
*Nucleophilic Acyl Substitution Reactions*
12. ----- **COLLEGE CLOSED (Thanksgiving)**-----
13. Chapter 22: Carbonyl Alpha-Substitution Reactions  
Chapter 23: Carbonyl Condensation Reaction
14. Chapter 24: Amines and Heterocycles  
**Lab 10:** Substitution vs Elimination: Predict the outcome  
**Review Chapter 19, 20, 21, 22, 23, 24**
15. **FINAL**