CHEM 2423: Organic Chemistry I | Lecture & Lab | #19571
Spring 2020 | 12 Weeks (2.18.2020-5.17.2020) | Northline Campus
Tu 6 PM-9:50 PM in Room 322 | Thu 6 PM-9:50 PM in Room 226
4-hour lecture/lab course | 64 hours per semester

Instructor Contact Information
Instructor: Paul Donald Roy, M.A., M.Ed. Text or Phone: 713-944-7021
HCC Email: paul.roy@hccs.edu

Please feel free to contact me at reasonable hours concerning any problems that you are experiencing in this course. Your performance in my class is very important to me. I am available to hear your concerns and to discuss course topics.

What’s Exciting About This Course
This course is designed to acclimate students to the unique field of organic chemistry. We will build upon the foundations explored in General Chemistry, as we embark on a tour of special phenomena that will help students gain an appreciation for the immense variety of organic functional groups and how they may be transformed.

My Personal Welcome
It is with great satisfaction that I welcome each of you to my course. I am now in my sixteenth year of teaching Organic Chemistry at Houston Community College. Each student who chooses my course is welcoming me to play a meaningful role in their training, as they ascend the heights of scientific knowledge that will hopefully lead to a fulfilling career.

Prerequisites and/or Co-Requisites
CHEM 2423 requires college-level reading and writing skills. Research indicates that you are most likely to succeed if you have already taken and passed Reading 0342, Math 0312 and Writing 0310 / 0349 or Math 0312 with INRW 0420. The minimum requirements for enrollment in CHEM 2423 include placement in college-level reading (or take INRW 0420). If you have enrolled in this course having satisfied these prerequisites, you have a higher chance of success than students who have not done so. Please carefully read and consider the repeater policy in the HCCS Student Handbook.
Instructional Materials

Textbook Information

The materials listed below are required for this course.

The texts are included in a package that contains the text as well as an access code and are found at the HCC Bookstore. You may either use a hard copy of the book, or rent the e-book from Pearson. Order your book here: HCC Bookstore
3. One (1) Scantron 886E Mini Exam Booklet (for Final Exam)
4. Safety glasses or goggles
5. Laboratory coat

Temporary Free Access to E-Book
Follow these steps to get temporary free access to a digital version of the text for fourteen days:
• Logon to Canvas
• Click “MyLab and Mastering”
• Click “Open MyLab & Mastering”
• Accept License Agreement
• Enter Pearson log-in credentials or create a new account
• Click “Get temporary access without payment for 14 days” at the bottom of the page
• Follow on-screen instructions from here.

Other Instructional Resources

Tutoring
HCC provides free, confidential, and convenient academic support to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel to ensure that it is contextual and appropriate. Visit the HCC Tutoring Services website for details.

Libraries
The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries’ resources and services is the HCCS library web page at http://library.hccs.edu.

Supplementary Instruction
Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at http://www.hccs.edu/resources-for/current-students/supplemental-instruction/.
Chemistry Program Information

Please visit the chemistry program page for more about our degree offering, requirements, employment prospects and more. [https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/chemistry/](https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/chemistry/)

Course Overview for CHEM 2423

This course is intended for students majoring in one of the physical sciences or life sciences, engineering, or for students who are pursuing pre-professional programs in medicine, dentistry, pharmacy, veterinary medicine, or other health programs. The course is also beneficial to students who are preparing themselves for higher level science courses in their respective curricula.

Science and engineering majors study atomic structure, chemical reactions, thermodynamics, electronic configuration, chemical bonding, molecular structure, gases, states of matter, and properties of solutions. The laboratory includes appropriate experiments.

Core Curriculum Objectives (CCOs) for all CHEM Core Courses

CHEM 2423 satisfies the chemistry requirement in the HCCS core curriculum. The HCCS Chemistry Discipline Committee has specified that the course address the following core objectives:

1. Demonstrate basic mastery of chemistry by writing formula and equations for chemical reactions, performing chemical calculations and recognizing the application of chemistry in our daily lives

2. Demonstrate a mastery of introductory and intermediate level chemistry to promote success in higher level chemistry and other science programs in four year universities

3. Demonstrate a mastery of General and Organic Chemistry in preparation for allied and professional health programs and engineering

4. Conduct laboratory experiments by making measurements, performing chemical reactions and analyzing the results in a group or individual setting.
Program Student Learning Outcomes (PSLOs) for all CHEM Courses

Can be found at http://learning.hccs.edu/programs/chemistry

Course Student Learning Outcomes (CSLOs) for CHEM 2423

Upon completion of CHEM 2423, the student will be able to:

1. Interpret organic structural formulae in terms of hybridization, geometry, bond angles, and formal charges.

2. Evaluate the polarity of bonds in organic structural formulae, so as to predict acid-base characteristics.

3. Recognize by name and structure a wide variety of organic functional groups.

4. Predict the relative stability of organic structural conformations.

5. Determine the correct systematic name for an organic compound, and vice versa, within the scope of relatively small alkanes, alkenes, alkynes, and organohalides.

6. Determine the presence of symmetry or chirality in organic compounds and determine their impact on physical and chemical properties.

7. Describe the significance of relative values of free energies of reaction or activation, equilibrium constants and rate coefficients in organic reactions.

8. For alkanes, alkenes, alkynes and organohalides, describe the important features of their reactions and predict missing substrates, reagents and products.

9. Plan syntheses of several steps, with proper order, reagents and intermediates.

10. Predict the mechanism of substitution and elimination reactions.

11. Evaluate important features of a mass spectrum to elucidate structure.
Learning Objectives for CHEM 2423

Learning Objectives for each CSLO can be found at Learning Objectives for CHEM 1311. Specifically, they are:

1. Explain the stereochemistry and chirality of organic compounds using specific rotation, optical activity, enantiomers, and diastereomers.
2. Identify the nomenclature rules for alkyl halides using IUPAC rules (method) to determine how to prepare alkyl halides.
3. Determine the structure of atoms, orbitals, hybridization, and electron configurations.
4. Identify the polarity of compounds such as acids, bases, and salts and draw Lewis dot resonance structures.
5. Identify functional groups and compare the conformations and stereochemistry of alkanes and cycloalkane derivative.
6. Write and identify the organic reaction mechanisms using electron flow (curved arrows) and determine the energy of organic reactions.
7. Explain the mechanisms of electrophilic reactions by orientation of Markovnikov’s rule and Cahn-Ingold-Prelog priority sequence rule for E and Z designation.
8. Prepare (synthesis) and complete reactions of alkenes and cycloalkenes such as addition, elimination, and oxidative cleavage.
9. Prepare (synthesis) and complete reactions of alkynes such as addition, elimination, and oxidative cleavage.
10. Describe the reaction mechanism types for alkyl halides such as E1, E2, SN1, and SN2 using the stability of carbocation and basicity of nucleophiles.
11. Purify organic solids by recrystallization and verify purity by melting point, IR spectroscopy, and thin layer chromatography.
12. Separate a mixture of liquids by simple and fractional distillation and compare the effectiveness of the two methods.
13. Perform single and double extractions of a solid dissolved in aqueous solution, calculate Kd for the organic solvent used, and compare the effectiveness of each method.
14. Purify a liquid product by distillation and verify purity by boiling point and IR spectroscopy.
15. At campuses with GC-MS instrumentation, identify the structure of organic compounds using mass spectral fragmentation patterns based on molecular weight and degree of unsaturation. In absence of instrumentation, analyze mass spectral data from textbook and other sources.

Student Success in CHEM 2423

As with any four semester-hour course, expect to spend at least eight hours per week outside of class preparing for lecture and practicing the material. I may suggest assignments to help you use that time wisely. Additional time may be required for lab reports. Successful completion of this course requires a combination of reading the textbook, attending class, completing practice problems, and participating in class discussions. There is no short cut for success in this course; it requires reading, copious practice of challenging problems and studying the material, using the course objectives as your guide.
Instructor and Student Responsibilities

As your Instructor, it is my responsibility to:

• Provide grading scale and formula explaining how student grades are derived
• Facilitate an effective learning environment through activities, discussions, and lectures
• Provide a description of any special projects or assignments
• Inform students of policies such as attendance, withdrawal, tardiness and make up
• Provide the course outline and class calendar include any special assignments
• Arrange to meet with individual students before and after class as required

To be successful in this class, it is the student’s responsibility to:

• Attend class and participate in class discussions and activities
• Read and comprehend the textbook
• Complete the required assignments and exams:
• Ask for help when there is a question or problem
• Keep copies of all paperwork, including this syllabus, handouts, and all assignments
• Attain a raw score of at least 70% on the departmental final exam
• Be aware of and comply with academic honesty policies in the HCCS Student Handbook

Academic Integrity

HCC has a zero tolerance policy toward cheating. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. “Scholastic dishonesty”: includes, but is not limited to, cheating on a test, plagiarism, and collusion. There is a **Zero tolerance** for any type of academic dishonesty. Please see the following link for further information: [Student Handbook](http://www.hccs.edu/online/)

Other Course Information

Scoring Rubrics, Sample Assignments, etc.

Look in Eagle Online Canvas for the scoring rubrics for assignment, samples of class assignments, and other information to assist you in the course.

[https://eagleonline.hccs.edu/login/ldap](https://eagleonline.hccs.edu/login/ldap)

HCC Online Information and Policies

[http://www.hccs.edu/online/](http://www.hccs.edu/online/)
Exams and Assignments

Exams
My Exams consist of forty questions, typically half of them being multiple choice with the remainder mostly short answers. I describe them with additional details during review.

CHEM 2423 Departmental Final Exam
All students will be required to take the comprehensive departmental final exam, roughly half of which consists of multiple-choice questions, with the remainder consisting largely of answers in the form of organic structures, reactions, syntheses and mechanisms. Students must provide their own Scantron forms (FORM NUMBER 886-E). All the information students need to prepare for the exam is in the review given in class or the Final Exam Handbook.

Students who are absent from the final exam without discussing their absence with the instructor in advance or within 24 hours afterward will receive a final exam grade of zero. Any student who does not take a makeup exam by the end of the following long semester will receive a final exam grade of zero and a course grade of F.

Grading Formula
A missed exam counts for a score of 0. If the final exam score is greater than that of lowest test score (including grades of 0), one lowest test score is dropped and the final exam percentage is doubled.

Hard copies of laboratory reports must be a minimum of two (2) pages and include procedure, observations/results and discussion. The medium and specific format are at your discretion. All lab reports are due at the time of the final examination.

Exams (3) 60%
Lab Reports 20%
Departmental Final Exam 20%

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 and up</td>
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<tr>
<td>B</td>
<td>80 – 89</td>
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<tr>
<td>C</td>
<td>70 – 79</td>
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<tr>
<td>D</td>
<td>60 – 69</td>
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<tr>
<td>F</td>
<td>&lt;60%</td>
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HCC Grading Scale can be found on this site under HCC Grading System: http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/

HCC Grading Scale can also be found on this site under Academic Information: http://www.hccs.edu/resources-for/current-students/student-handbook/
## Course Calendar

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<thead>
<tr>
<th>Week #</th>
<th>Laboratory</th>
<th>Lecture</th>
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</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td>Safety; Nomenclature</td>
<td>Chapters 1 and 2</td>
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<tr>
<td>02/17</td>
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<tr>
<td><strong>Week 2</strong></td>
<td>Melting Point</td>
<td>Chapters 3 and 4</td>
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<tr>
<td>02/24</td>
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<tr>
<td><strong>Week 3</strong></td>
<td>Review</td>
<td>Test 1</td>
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<tr>
<td>03/02</td>
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<tr>
<td><strong>Week 4</strong></td>
<td>Recrystallization</td>
<td>Chapters 6 and 7</td>
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<tr>
<td>03/09</td>
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<tr>
<td><strong>Week 5</strong></td>
<td>Spring Break</td>
<td>Spring Break</td>
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<tr>
<td>03/16</td>
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<tr>
<td><strong>Week 6</strong></td>
<td>Liquid-liquid extraction</td>
<td>Chapter 8</td>
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<tr>
<td>03/23</td>
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<tr>
<td><strong>Week 7</strong></td>
<td>Short path distillation</td>
<td>Chapter 9</td>
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<tr>
<td>03/30</td>
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<tr>
<td><strong>Week 8</strong></td>
<td>Review</td>
<td>Test 2</td>
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<tr>
<td>04/06</td>
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<tr>
<td><strong>Week 9</strong></td>
<td>Fractional distillation</td>
<td>Chapter 5</td>
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<td>04/13</td>
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<td><strong>Week 10</strong></td>
<td>Thin Layer Chromatography</td>
<td>Chapter 10</td>
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<td>04/20</td>
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<tr>
<td><strong>Week 11</strong></td>
<td>Properties of Hydrocarbons</td>
<td>Chapter 11 and mass spectrometry</td>
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<td>04/27</td>
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<tr>
<td><strong>Week 12</strong></td>
<td>Review</td>
<td>Test 3</td>
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<tr>
<td>05/04</td>
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<tr>
<td><strong>Week 13</strong></td>
<td>Review</td>
<td>Final Exam</td>
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<td>05/11</td>
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### Syllabus Modifications
The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.
HCC Policies
Here’s the link to the HCC Student Handbook [http://www.hccs.edu/resources-for/current-students/student-handbook/](http://www.hccs.edu/resources-for/current-students/student-handbook/) In it you will find information about the following:

<table>
<thead>
<tr>
<th>Academic Information</th>
<th>Incomplete Grades</th>
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</thead>
<tbody>
<tr>
<td>Academic Support</td>
<td>International Student Services</td>
</tr>
<tr>
<td>Attendance, Repeating Courses, and Withdrawal</td>
<td>Health Awareness</td>
</tr>
<tr>
<td>Career Planning and Job Search</td>
<td>Libraries/Bookstore</td>
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<tr>
<td>Childcare</td>
<td>Police Services &amp; Campus Safety</td>
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<tr>
<td>disAbility Support Services</td>
<td>Student Life at HCC</td>
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<tr>
<td>Electronic Devices</td>
<td>Student Rights and Responsibilities</td>
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<tr>
<td>Equal Educational Opportunity</td>
<td>Student Services</td>
</tr>
<tr>
<td>Financial Aid TV (FATV)</td>
<td>Testing</td>
</tr>
<tr>
<td>General Student Complaints</td>
<td>Transfer Planning</td>
</tr>
<tr>
<td>Grade of FX</td>
<td>Veteran Services</td>
</tr>
</tbody>
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**EGLS³**
The EGLS³ ([Evaluation for Greater Learning Student Survey System](http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/)) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS³ surveys are only available for the Fall and Spring semesters. -EGLS3 surveys are not offered during the Summer semester due to logistical constraints.

http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/

**Campus Carry Link**
Here’s the link to the HCC information about Campus Carry: [http://www.hccs.edu/departments/police/campus-carry/](http://www.hccs.edu/departments/police/campus-carry/)

**HCC Email Policy**
When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go [to HCC Eagle ID and activate it now](http://www.hccs.edu/applying-and-paying/financial-aid/financial-coach/). You may also use Canvas Inbox to communicate.

**Basic Needs**
Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so. Additional information may be found at: [http://www.hccs.edu/applying-and-paying/financial-aid/financial-coach/](http://www.hccs.edu/applying-and-paying/financial-aid/financial-coach/)
Office of Institutional Equity
Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement (http://www.hccs.edu/departments/institutional-equity/)

disAbility Services
HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to http://www.hccs.edu/support-services/disability-services/

Title IX
Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu
http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/

Office of the Dean of Students
Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints. https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/

Department Chair Contact Information
If you have questions or concerns about the course, please see your instructor. Should you wish to contact the department chair, below is his information: Dr. Emmanuel Ewane, emmanuel.ewane@hccs.edu; 713-718-5414