Division of Natural Sciences and Geology
Department of Chemistry
http://learning.hccs.edu/programs/chemistry

CHEM 2423: Organic Chemistry I | Lecture/Lab | 19259
In-Person | Southeast Eastside| MW 11 a.m.-1:50 p.m.
4-hour lecture/lab course | 96 hours per semester

Time and Location
M: 11 am – 1:50 pm  FM 122 (Lecture)
W: 11 am – 1:50 pm  FM 223 (Lab)

Instructor Contact Information
Instructor: Jing Sun, Ph.D.  Office Phone: 713-718-7080
Office: Southeast, Room FM210  Office Hours: TTh 10-11 a.m., by appointment
HCC Email: Eagle Online (Canvas) email OR jing.sun@hccs.edu

Please feel free to contact me 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 just to discuss course topics. Email is the best way to communicate. I will respond to emails within 24 hours Monday through Friday; I will reply to weekend messages on Monday mornings.

What’s Exciting About This Course
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.

My Personal Welcome
Welcome to Organic Chemistry 2423—I’m delighted that you have chosen this course. One of my passions is teaching students in a fun and effective way, I can hardly wait to pass that on. I will present the information in the most exciting way I know, so that you can grasp the concepts and apply them now and hopefully throughout your life. As you read and wrestle with new ideas and facts that may challenge you, I am available to support you. The fastest way to reach me is by my HCC email. The best way to really discuss issues is in person and
I’m available during posted office hours to tackle any questions you might have. My goal is for you to walk out of the course with a better understanding of yourself and of human behavior. So please visit me or contact me whenever you have a question.

**Prerequisites and/or Co-Requisites**

Prerequisites: CHEM 1412; must be placed into college-level reading and be placed into MATH 1314 (or higher) and be placed into college-level writing. Please carefully read and consider the repeater policy in the HCCS Student Handbook.

**Eagle Online Canvas Learning Management System**

This section of CHEM 2423 will use Eagle Online Canvas to supplement in-class assignments, exams, and activities. PowerPoint slides, study guide and answer keys of practice problems can be downloaded from the canvas. Most announcements regarding the course will be announced in the class and appear on the homepage of the Eagle Online internet course. Check these announcements each time you login. Check your canvas email at least twice a week, emails contain information pertaining to the course, assignments, due dates and any changes that are being made to the site. The instructor will only be able to send correspondence from Eagle Online to your student account so please check it regularly as you are responsible for content of messages. HCCS Open Lab locations may be used to access the Internet and Eagle Online Canvas. It is recommended that you use Firefox or Chrome as your browser.

**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. 4 Scantron 882-E (for test dates)

4. A Nonprogrammable scientific calculator
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 in order to ensure that it is contextual and appropriate. Visit the [HCC Tutoring Services](http://library.hccs.edu) 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](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/](http://www.hccs.edu/resources-for/current-students/supplemental-instruction/).

Course Overview for CHEM 2423

CHEM 2423 is the first part of organic chemistry course which is intended to show students the importance of organic chemistry in their major area of study as well as its applications to their daily lives. It provides the necessary background for specialist studies and includes appropriate experiments to reinforce theoretical concepts.

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 addresses 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

1. Compare and contrast the structures, properties, and reactions of aliphatic hydrocarbons (alkanes, alkenes, and alkynes), and alkyl halides.
2. Formulate reaction mechanisms for the synthesis and transformation of the above functional groups.
3. Perform and justify the separation techniques used in purifying organic compounds.
4. Interpret experimental data obtained from classical and spectroscopic methods used in characterizing organic compounds.

Learning Objectives for CHEM 2423

Learning Objectives for each CSLO can be found at Learning Objectives for CHEM 2423. Specifically, they are:

SLO 1. Compare and contrast the structures, properties, and reactions of aliphatic hydrocarbons, alkyl halides, alcohols, and ethers.

1.1. Explain the stereochemistry and chirality of organic compounds using specific rotation, optical activity, enantiomers, and diastereomers.

1.2. Identify the nomenclature rules for alkyl halides using IUPAC rules (method) to determine how to prepare alkyl halides.

1.3. Determine the structure of atoms, orbitals, hybridization, and electron configurations.

1.4. Identify the polarity of compounds such as acids, bases, and salts and draw Lewis dot resonance structures.

1.5. Identify functional groups and compare the conformations and stereochemistry of alkanes and cycloalkane derivatives.

SLO 2. Formulate reaction mechanisms for the synthesis and transformation of the above functional groups.

2.1. Write and identify the organic reaction mechanisms using electron flow (curved arrows) and determine the energy of organic reactions.

2.2. Explain the mechanisms of electrophilic reactions by orientation of Markovnikov’s rule and Cahn-Ingold-Prelog priority sequence rule for E and Z designation.

2.3. Prepare (synthesis) and complete reactions of alkenes and cycloalkenes such as addition, elimination, and oxidative cleavage.
2.4. Prepare (synthesis) and complete reactions of alkynes such as addition, elimination, and oxidative cleavage.

2.5. Describe the reaction mechanism types for alky halides such as E1, E2, SN1, and SN2 using the stability of carbocation and basicity of nucleophiles.

SLO 3. Perform and justify the separation techniques used in purifying organic compounds.
3.1. Purify organic solids by recrystallization and verify purity by melting point, IR spectroscopy, and thin layer chromatography.

3.2. Separate a mixture of liquids by simple and fractional distillation and compare the effectiveness of the two methods.

3.3. Perform single and multiple extractions of a solid dissolved in aqueous solution, calculate Kd for the organic solvent used, and compare the effectiveness of each method.

3.4. Purify a liquid product by distillation and verify purity by boiling point and IR spectroscopy.

SLO 4. Interpret experimental data obtained from classical and spectroscopic methods used in characterizing organic compounds.

4.1. 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 three-hour course, expect to spend *at least ten hours per week* outside of class reading and studying the material. I will provide assignments to help you use those ten hours per week wisely. Additional time will be required for written assignments. Successful completion of this course requires a combination of reading the textbook, attending class, completing assignments in Eagle Online, and participating in class discussions. There is no short cut for success in this course; it requires reading, solving 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 the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through class 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 which will include a description of any special projects or 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
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

Exams and Assignments

Exams

There are three regular exams and one comprehensive final exam. Write the version(s) on your Scantron. No make-up lecture exams are allowed for any excuses. Departmental Final Exam is mandatory and cannot be dropped. Departmental Final Exam may be counted twice to replace the lowest test score of the regular exams if the Final Score is higher than the lowest one. This is intended to provide you with a “second chance” if you do not well on a particular exam. Thus missing the Final or inadequate preparation for it will have adverse consequence affecting your grade. There will be a total of three lecture exams and all exams are taken during the class period. Each exam will contain a number of multiple-choice questions and short answer questions. Final exam is comprehensive and it lasts for two hours. HCC does not provide students with Scantron forms. They are sold in campus bookstores.

In-Class Activities

Students are expected to complete homework, worksheet problems for points and practice.

Laboratory Policy

Safety glasses or goggles must be worn at all times during the laboratory period. It is also recommended that students wear old clothing to lab, and have a second set of clothes readily available, should exposure to chemicals occur and a change of clothing is necessary. Alternatively, a lab coat may be purchased. Experiments will be performed in groups of about three to four students. Lab reports are to be prepared and submitted individually. Lab reports from different individuals with identical wording are not acceptable. Late lab reports will not be accepted. Students should come to lab prepared and read through the
experiment beforehand. **There will be no make-up lab.** Students are expected to attend lab sessions regularly.

**CHEM 2423 Departmental Final Exam**

All students will be required to take a comprehensive departmental final exam. Students must provide their own Scantron forms (FORM NUMBER 882-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.

**Policy Regarding Making Up Missed Assignments**

No make-up lecture exams are allowed for any excuses. **Departmental Final Exam** is mandatory and cannot be dropped. **Departmental Final Exam** may be counted **twice** to replace the **lowest** test score of the regular exams if the **Final Score** is higher than the lowest one.

**Grading Formula**

Your letter grade will be based on how well you have met the requirement and grading policy. You are strongly encouraged to do your homework and practice exams.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>3 Lecture Exams</td>
<td>50%</td>
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<tr>
<td>Homework</td>
<td>10%</td>
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<tr>
<td>Lab</td>
<td>20%</td>
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<tr>
<td>1 Comprehensive System Final</td>
<td>20%</td>
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</tbody>
</table>

*Course Grade* = 0.5(Average of three regular exams) + 0.1(Average of homework) + 0.2(Laboratory grade) + 0.2(Final Exam)

For any unpredictable or uncontrollable absence due to illness or work, you must bring the third party's documentation like physician’s note or letter from employer to avoid point deduction of your lab. **No grade will be released over the phone or by email or to your friend, classmates or spouse even if you are taking the same class.** All tests will be returned for viewing and for any grading error during the following class and must be returned for grade recording. **Failure to return the test will result in recording as a zero for the test.**

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/](http://www.hccs.edu/about-hcc/procedures/student-rights-policies-procedures/student-procedures/)
<table>
<thead>
<tr>
<th>Week #</th>
<th>Lecture (M)</th>
<th>Lab/Lecture (W)</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Syllabus / Introduction</td>
<td>Chapter 1: Structure and Bonding</td>
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<tr>
<td>1/14</td>
<td>Chapter 1: Structure and Bonding</td>
<td>Exp 1: Safety lab</td>
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<tr>
<td>Week 2</td>
<td>Martin Luther King</td>
<td>Chapter 2: Polar Covalent Bonds; Acids and Bases</td>
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<tr>
<td>1/21</td>
<td>NO CLASS!</td>
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<tr>
<td>Week 3</td>
<td>Chapter 3: Alkanes and Their Stereochemistry</td>
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<tr>
<td>1/28</td>
<td></td>
<td>Exp 2: Melting Point Determination</td>
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<tr>
<td>Week 4</td>
<td>Chapter 3 Continued</td>
<td>Chapter 4 Continued</td>
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<tr>
<td>2/4</td>
<td>Chapter 4: Cycloalkanes and Their Stereochemistry</td>
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<tr>
<td></td>
<td>Exam 1 Review</td>
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<tr>
<td>Week 5</td>
<td><strong>Exam 1</strong> (covers chapter 1,2,3,4)</td>
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<tr>
<td>2/11</td>
<td>Exp 3: Recrystallization</td>
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<tr>
<td>Week 6</td>
<td>President’s Day</td>
<td>Chapter 5: Stereochemistry at Tetrahedral Centers</td>
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<tr>
<td>2/18</td>
<td>NO CLASS!</td>
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<tr>
<td>Week 7</td>
<td>Chapter 5 Continued</td>
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<tr>
<td>Week 8</td>
<td>Chapter 6 Continued</td>
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<tr>
<td>3/4</td>
<td>Chapter 7: Alkenes</td>
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<tr>
<td></td>
<td>Chapter 7: Alkenes</td>
<td>Exp 5 Distillation</td>
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<tr>
<td>3/11</td>
<td><strong>Spring Break! NO CLASS!</strong></td>
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<tr>
<td>Week 9</td>
<td>Chapter 7: Alkenes: Structure and Reactivity</td>
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<tr>
<td>3/18</td>
<td>Continued</td>
<td>Chapter 8: Alkenes: Reactions and Synthesis</td>
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<tr>
<td>Week 10</td>
<td>Chapter 8 Continued</td>
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<tr>
<td>3/25</td>
<td><strong>Exam 2 Review</strong></td>
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<tr>
<td></td>
<td>(covers chapter 5,6,7,8)</td>
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<tr>
<td>4/1</td>
<td><strong>Last Day to WITHDRAW</strong></td>
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<tr>
<td>Week 11</td>
<td>Chapter 9: Alkynes: An introduction to Organic</td>
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<tr>
<td>4/1</td>
<td>Synthesis</td>
<td>Exp 10 Properties of Hydrocarbons</td>
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<tr>
<td>Week 12</td>
<td>Chapter 9 Continued</td>
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<tr>
<td>4/8</td>
<td>Chapter 10: Organohalides</td>
<td>Chapter 10 Continued</td>
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<tr>
<td>Week 13</td>
<td>Chapter 11: Reactions of Alkyl Halides:</td>
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<tr>
<td>4/15</td>
<td>Nucleophilic Substitutions and Eliminations</td>
<td>Exp 7: Thin Layer Chromatography</td>
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<tr>
<td>Week 14</td>
<td>Chapter 11: continued</td>
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<tr>
<td>4/22</td>
<td><strong>Exam 3 Review</strong></td>
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<tr>
<td>Week 15</td>
<td><strong>Exam 3</strong> (covers chapters 9,10,11)</td>
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<tr>
<td>4/29</td>
<td>Chapter 12: Structure Determination</td>
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<tr>
<td>Week 16</td>
<td><strong>Final Exam (chapter 1-12)</strong></td>
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<tr>
<td>5/6</td>
<td><strong>May 6th, 11-2 pm</strong></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.

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

HCC Online Information and Policies
http://www.hccs.edu/online/

EGLS³
The EGLS³ (Evaluation for Greater Learning Student Survey System) 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.
https://hccsaweb.hccs.edu:8080/psp/csprd/?cmd=login&languageCd=ENG&

HCC Email Policy
HCC prefers students to communicate only through the HCCS email system to protect your privacy. If you have not activated your HCCS student email account, you can go to HCC Eagle ID and activate it now. You may also use Canvas Inbox to communicate.

HCC Policy Statements
Here’s the link to the HCC Student Handbook http://www.hccs.edu/resources-for/current-students/student-handbook/ In it you will find information about the following:

Academic Honesty
Academic Information
Academic Support
Attendance, Repeating Courses, and Withdrawal
Campus Carry
Career Planning and Job Search
Childcare
Course Etiquette
disAbility Support Services
Electronic Devices
Equal Educational Opportunity
Financial Aid TV (FATV)
General Student Complaints
Grade of FX and International Students
Health Awareness
Incomplete Grades
International Student Services
Libraries/Bookstore
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/](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/](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  
Chemistry Department Chair
Dr. Emmanuel Ewane, emmanuel.ewane@hccs.edu; 713-718-5414