

# HCCS, Central

## CHEMISTRY 2423 COURSE SYLLABUS

Class# **70038**, Fall 2015

**Tuesdays: Lecture:** 9.00 AM – 12.00 Noon (LHSB 416)

**Thursdays: Lab:** 9.00 AM – 12.00 Noon (LHSB 409)

**Instructor: Shamsuddin Shaikh, Ph.D.**

Phone: 713-718-6315

Email: [shamsuddin.shaikh@hccs.edu](mailto:shamsuddin.shaikh@hccs.edu)

Office Location: LHSB 401

Office Time: Tuesdays and Thursdays 3.00 PM-5.00 PM

### **Tutoring:**

Learning Emporium: SJ 384

7 am - 6 pm M--TH

8 am - 4 pm F

**Askonline.org**

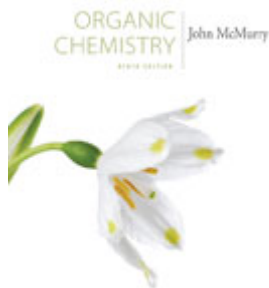
**Prerequisite:** Chemistry 1412

**Credit:** 4 (3 lecture, 3 lab)

**Course Description:** The study of carbon compounds, including an introduction to organic reaction mechanisms. Topics include alkanes, alkenes, alkynes, stereochemistry, alkyl halides and substitution reactions, and organic synthesis. The laboratory includes appropriate experiments. Students will have a chance to do some

experiments using sophisticated spectroscopic instruments like NMR, IR, UV-Vis and GCMS.

**Textbook:** Chem 2423: Organic Chemistr-1, 9<sup>th</sup> Edition, by John McMurry.



**Lab-book:** I will provide handouts for necessary experiments.

**Safety Goggles** (Central Bookstore or elsewhere)

**Periodic Table:** will be provided at the time of each exam

**Students with Ability Challenges:** Any student with a documented ability challenges (e.g. physical, learning, psychiatric, developmental, vision, hearing, etc) who needs to be arranged reasonable accommodations must contact the ADA Counselor at the beginning of each semester. Faculty members are authorized to provide only the accommodations requested by the Ability Services office. 713-718-6141.

**Discipline in the Class:** As your instructor and as a student in this class, it is our shared responsibility to develop and maintain a positive learning environment for everyone. I take this responsibility very seriously and will inform members of the class if their behavior makes it difficult for me to carry out this task. As a fellow learner, you are asked to respect the learning needs of your classmates and assist me achieve this critical goal.

**Electronics in the Classroom:** As a student active in the learning community of this course, it is your responsibility to be respectful of the learning atmosphere in your classroom. To show respect of your fellow students and instructor, you will turn off your phone and other electronic devices, and will not use these devices in the classroom or in Exams.

**Academic Honesty:** Zero tolerance for any type of academic dishonesty.

**Attendance and Withdrawal Policy:** Attending class regularly is the best way to succeed in this class. Research has shown that the single most important factor in student success is attendance. Simply put, going to class greatly increases your ability to succeed. In order to support your ability to succeed, I have made

attendance a factor in your final grade. Students with **100% on time attendance will get a 2% extra credit of total grade.** This should be the easiest outcome for you to get 2% credit. This should be the easiest outcome for you to achieve in this class. You should understand that your in-class grade will suffer as a result of unexcused absences, and of course your ability to do the work required in the course will also be impaired and grades on that work will naturally be lower.

Keeping perfect attendance is essential for any science class. Students are responsible by themselves for catching up the course works due to absence, tardiness or any other forms of missing the class. A student may be dropped from a course after the student has accumulated absences in excess of 12.5% of the hours of instruction.

### **Last day for withdrawal: 10/30/2015, Friday (4.30 PM)**

If you feel that you cannot complete this course, or your performance is not to the level of your desired grade, you will need to withdraw from the course prior to the final date of withdrawal. Before you withdraw from your course, please take the time to meet me to discuss why you feel it is necessary to do so. I may be able to provide you with suggestions that would enable you to complete the course. Your success is very important.

**New Policy for Repeated Students:** Students who repeat a course for a third or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. Please ask your instructor/counselor about opportunities for tutoring/other assistance prior to considering course withdrawal or if you are not receiving passing grades

**Sexual Misconduct:** HCC is committed to provide a learning and working environment that is free from discrimination on the basis of sex which includes all forms of sexual misconduct. Title IX of the Education Amendments of 1972 requires that when a complaint is filed, a prompt and thorough investigation is initiated. Complaints may be filed with the HCC Title IX Coordinator available at 713 718-8271 or email at oie@hccs.edu.

### **EGLS<sub>3</sub>: Evaluation for Greater Learning Student Survey System**

At HCCS, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvements of instruction. Look for the **EGLS<sub>3</sub>** as part of the HCC Student System online near the end of the term.

**Testing:** 3 tests will be given during the semester. The tests will take 50% of the total grade. Each test will be concentrated with specific chapters. The test date and the exact content is given in the course calendar

**Lab:** The lab takes about 20% (15% + 5%) of the total grade. Each lab will be graded based on your attendance, participation and performance (15%) and pre lab and post lab questions (5%). **Safety is the most important issue in the lab.** You must follow the safety procedure all the time.

**Final:** A system wide final exam will be given. It is comprehensive. The final exam will take 20% of the total grade.

**Online Homework: (10%)** After completing each chapter, I will make available online home work. To access the homework you need to buy a book, e\_book, or access code at Connect to <http://login.cengagebrain.com/course/E-TWQNU7EC53CAG>. You will see questions for mastering the subject and end of the chapter questions also. The best way to prepare for the exams is doing as many problems as possible. I encourage you to do these problems even though you don't have to turn them in.

## How to access your OWLv2 course

### Organic Chemistry I-Fall 2015

Instructor(s): Shamsuddin Shaikh

Start Date: 08/23/2015

#### *What is OWLv2?*

OWLv2 is the most trusted online learning solution for chemistry, proven to help you get a better grade.

#### *Registration*

1. Connect to <http://login.cengagebrain.com/course/E-TWQNU7EC53CAG>
2. Follow the prompts to register your OWLv2 course.

#### *Payment*

After registering for your course, you will need to pay for access using one of the options below

Online: You can pay online using a credit or debit card, or PayPal.

Bookstore: You may be able to purchase access to OWLv2 at your bookstore. Check with the bookstore to find out what they offer for your course.

Free Trial: If you are unable to pay at the start of the semester you may choose to access OWLv2 during your free trial. After the free trial ends you will be required to pay for access.

Please note: At the end of the free trial period, your course access will be suspended until your payment has been made. All your scores and course activity will be saved and will be available to you after you pay for access.

If you already registered an access code or bought OWLv2 online, the course key to register for this course is: E-TWQNU7EC53CAG

**Make—up Policy** : No makeup is allowed for any homework, lab or exam. The lowest score of one of the 3 exams will be replaced with the final exam score if the final exam score is better. Also if you miss any exam, that particular exam will be replaced with final exam score.

**Grading Policy:**

3 Tests: 50%

Final Exam: 20%

Online Homework: 10%

Lab: 20%

100% on time attendance: 2% extra credit.

**Grading Scale:**

90 -- 100 A

80 -- 89 B

70 -- 79 C

60 -- 69 D

Below 60 F

### General Suggestions

Chemistry is a vast field, ranging from the study of simple inorganic salts to enormously complex molecules such as enzymes and nucleic acids in living organisms. In this course, the major topics we will be covering are chemical formulas, reactions, and stoichiometry calculations, chemical thermodynamics, electron configuration and chemical bonding, gas laws, and solutions. As you might suspect, it can be easy to fall behind and, as a result, to not be ready for the exams.

Following are some general tips that may be helpful:



Learning chemistry takes time. A reasonable guide is to allow your self two hours of study for each hour of lecture. Heavy work and/or class loads are not compatible with learning chemistry!



Attend class regularly (!) and take generous notes during class. Ask questions.



When beginning a new chapter, I recommend that you read through it quickly the first time, just to give yourself a good feel for what it is about. If you are really on the job you will have done this before the class lecture on the chapter! You will understand what's going on in class much better if you do this.



Next, start tackling the end of chapter problems! Often, working problems facilitates understanding much better than just reading and rereading the chapter itself. Chemistry is a "hands on" course - working problems is essential. However, do not spend an inordinate amount of time on a single problem - skip it for the time being and go on to another. Try working some of the sample exercises. They are worked out in the chapter and are very helpful.



Get a good, scientific calculator that has scientific notation ("EE" or "EXP" key), log, ln,  $x^2$ ,  $\sqrt{\quad}$  etc. Business calculators usually do not have all of these features. I still use a good ol' TI-36 Solar myself.



Review basic math operations such as properties of logarithms, if you are rusty.



Study groups can be very helpful. Keep the group small though, no more than three or four people.



Finally, keep a positive attitude! Chemistry can be hard, but with the right attitude and approach, you will succeed in mastering it!

I hope you find chemistry to be an interesting and rewarding subject which will not only be useful in your academic major, but will give you a better insight into the many scientific challenges we are facing today. I look forward to working with you this semester!

## Course Calendar and Content:

| <u>Day</u> | <u>Date (M/D)</u> |   |
|------------|-------------------|---|
| 1.         | 08/25             | Introduction & Ch. 1  |
| 2.         | 08/27             | Ch.1 contd., & Lab Safety training  |
| 3.         | 09/01             | Ch. 2   |
| 4.         | 09/03             | Ch. 3   |
| 5.         | 09/08             | Ch. 4   |
| 6.         | 09/10             | Exp. 1 <u>Molecular models &amp; Structural isomers</u> <ol style="list-style-type: none"><li>Structural isomers of butane and pentane (mono and dichloro alkanes)</li><li>Structural isomers of butanol</li></ol>                      |
| 7.         | 09/15             | Exam 1 review (ch. 1-4)   |
| 8.         | 09/17             | Exp. 2: Identification of functional groups using FT-IR <ul style="list-style-type: none"><li>FT-IR of cyclohexane, cyclohexanol, cyclohexene, and acetone</li></ul>  |
| 9.         | 09/22             | <b>Exam 1 (Ch. 1-4)</b>   |
| 10.        | 09/24             | Ch. 5   |
| 11.        | 09/29             | Ch 6  |
| 12.        | 10/01             | Exp. 3: Separation of solvent mixtures by distillation <ul style="list-style-type: none"><li>Separation of alcohol from a mixture of water and alcohol.</li></ul>   |
| 13.        | 10/06             | Ch. 7   |
| 14.        | 10/08             | Exp. 4: Cycloalkanes and Alkenes <ol style="list-style-type: none"><li>Molecular models constitutional and geometrical isomers of dichlorocyclobutane and dichlorobutene</li><li>Preparation of cyclohexene from cyclohexanol</li></ol> |

|            |              |  |
|------------|--------------|--|
|            |              | <ul style="list-style-type: none"> <li>○ Dehydration of alcohol and isolation of product using distillation process</li> <li>○ Purification and isolation of anhydrous alkene</li> <li>○ Characterization of product using FT-IR</li> </ul>  |
| 15.        | 10/13        | Ch. 8  |
| 16         | 10/15        | Exp. 4 contd.,   |
| 17.        | 10/20        | <a href="#">Exam 2 Review (Ch. 5-8)</a>  |
| 18.        | 10/22        | <p>Exp. 5: Thin layer chromatography (TLC)</p> <p>a. <math>R_f</math> values of</p> <ul style="list-style-type: none"> <li>• Acetaminophen</li> <li>• Aspirin</li> <li>• Caffeine</li> <li>• Excedrin</li> <li>• Motrin</li> </ul> <p>b. Predict the unknown compounds using <math>R_f</math> values</p> |
| <b>19.</b> | <b>10/27</b> | <b>Exam 2 (Ch. 5-8)</b>  |
| 20.        | 10/29        | Ch. 9  |
|            | 10/30        | <b><u>(Friday 4.30 pm) Last day for Withdrawal</u></b>   |
| 21         | 11/03        | Ch. 10   |
| 22         | 11/05        | <p>Exp. 6: Synthesis of Aspirin</p> <p>a. Isolation</p> <p>b. Recrystallization</p> <p>c. Characterization using UV-vis spectrophotometer and <math>^{13}\text{C}</math> NMR</p>   |
| 23         | 11/10        | Ch. 11   |
| 24.        | 11/12        | Exp. 6 contd.,   |
| 25.        | 11/17        | Ch. 12   |
| 26.        | 11/19        | Exp. 7: Mass spectra of Isomers of Butanol   |



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|-----|-------|--|
| 27. | 11/24 | Exam 3 Review (Ch. 9-12)                                       |
| 28. | 11/26 | Thanksgiving Day   |
| 29. | 12/01 | Exam 3 (Ch. 9-12)  |
| 30. | 12/03 | Final Review (Ch. 1-12)  |
| 31. | 12/08 | 9.00 AM: Final Exam* (System wide, comprehensive,<br>Ch. 1-12) |