



## Division of Natural Sciences and Geology

### Department of Chemistry

<http://learning.hccs.edu/programs/chemistry>

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## **CHEM 1311: General Chemistry I | Lecture | #17957**

Spring 2019 | 16 Weeks (1.14.2019-5.12.2019)

in-Person | Stafford Scarcella Center Rm W115 | TR 7:30 p.m – 8:50 p.m.  
1-hour 20 mins lecture course | 48 hours per semester

### **Instructor Contact Information**

Instructor:	Adetoun Oyinlola, Ph.D.	Office Phone:	713-718-6757
Office:	Stafford Scarcella Center	Office Hours:	Email for appointment
HCC Email:	<a href="mailto:adetoun.oyinlola@hccs.edu">adetoun.oyinlola@hccs.edu</a>	Office Location:	Stafford Scarcella-Faculty Area

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.

### **What's Exciting About This Course**

You will learn so much about your life and the lives of those around you. Do you know how one learns? How memory works? Why we have different personalities? How health is related to stress? The course will look at how and why we develop from children that seem to have so much in common to adults that do and do not. What happens? Are there best practices in child rearing and in life-long development or is it just luck? Where are you in your development? And what about schizophrenia and other psychological disorders? Are they avoidable? What causes them? The information in this course will enable you to understand the people in your life as well as develop new habits to increase your personal success.

### **My Personal Welcome**

Welcome to Introduction to Chemistry—I am delighted that you have chosen this course. One of my passions is to inspire students' creativity, develop their critical thinking ability and prepare them for the complex world they will face after stepping off campus. 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

CHEM 1311 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 1411 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](#).

### Eagle Online Canvas Learning Management System

This section of CHEM 1311 can be viewed online to the textbook website and view one of the presentations in Mastering Chemistry. 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.

1. Brown, LeMay Jr, Bersten, Murphy, Woodward, Stoltzfus. (2017). *Chemistry : The Central Science*, 14<sup>th</sup> ed., Pearson, MN. ISBN 9780134414232

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](#)

2. 4 Scantron 886E Mini Exam Booklets (for test dates)
3. A Nonprogrammable scientific calculator

## 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" near 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 in order 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/>.

## Course Overview for CHEM 1311

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.

**NOTE: This is not a hybrid class.**

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

## **Core Curriculum Objectives (CCOs) for all CHEM Core Courses**

CHEM 1311 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 1311**

Upon completion of CHEM 1311, the student will be able to:

1. Give names and formulas of elements, ions, and ionic and molecular compounds.
2. Categorize, complete, and balance chemical reactions.
3. Do chemistry calculations involving reaction stoichiometry and energy changes.
4. Relate the properties of electromagnetic radiation (frequency, wavelength, and energy) to each other and to the energy changes atoms undergo which accompany electronic transitions.
5. Identify the parts of the periodic table and the trends in periodic properties of atoms.
6. Relate the properties of gases with the gas laws and extend the application of these relationships to reaction stoichiometry, gas mixtures, and effusion/diffusion of gases.
7. Depict chemical bonding with dot structures and valence bond theory and determine the molecular shapes (geometry) of molecules based on VSEPR and valence bond theory.
- 8: Calculate density and relate the value to mass and volume measurements for all physical states.
- 9: Measurements and conversions in Metric, SI, and American systems

10: Apply thermochemical principles to evaluate work, heat, and energy relationships based on specific heat, calorimetry, and temperature changes.

## Learning Objectives for CHEM 1311

Learning Objectives for each CSLO can be found at [Learning Objectives for CHEM 1311](#). Specifically, they are:

- 1.1 Given the name, identify the formula and charge of positive and negative ions, and vice-versa.
- 1.2 Given the name, write the formula of ionic compounds, binary molecular compounds, and acids. Given the formulas of these types of compounds, name them.
- 2.1 Identify given reactions as combination, decomposition, single displacement, and double displacement.
- 2.2 Starting with the reactants, complete the reaction by writing the reaction products.
- 2.3 Given the reactants and products, balance the equation for the reaction.
- 3.1 Convert amounts in units of mass or volume to moles, and vice-versa.
- 3.2 Given the amount of one substance in a reaction, calculate the amount of the other substances that react and form.
- 3.3 Identify the limiting reactant and excess reactant in a reaction where more than one reactant amount is given.
- 3.4 Determine the amount of the excess reactant that remains as unreacted excess.
- 3.5 Calculate energy changes associated with chemical reactions using Hess's law, standard enthalpies of formation, or calorimetry.
- 4.1 Relate frequency, wavelength, and the speed of electromagnetic radiation.
- 4.2 From the frequency or wavelength of electromagnetic radiation, calculate its energy.
- 4.3 Relate the energy change in the hydrogen atom to its electronic transitions using the Bohr model.
- 4.4 Identify and relate the four quantum numbers that can be associated with electrons.
- 4.5 Write the electronic configurations of atoms and ions, including the box diagram method.
- 5.1 Identify the common regions of the periodic table. Identify by name selected groups of elements in the periodic table.
- 5.2 Using the periodic table, identify the trend (increasing or decreasing in value) of selected properties of atoms such as atomic radius, ionization energy, and electron affinity.
- 5.3 Identify reaction similarities of elements within the same group in the periodic table.
- 6.1 Relate and calculate the pressure, volume, temperature, or amount of gas using Boyle's law, Charles' law, Gay-Lussac's law, Avogadro's law, the combined gas law, and the ideal gas law.
- 6.2 Perform stoichiometry calculations which involve gaseous substances.
- 6.3 Use Dalton's law and Graham's law to perform calculations involving gaseous mixtures and effusion and diffusion of gases.
- 6.4 Explain the assumptions of the kinetic-molecular theory of gases.

- 7.1 Draw the Lewis dot structure of molecules containing two or more atoms.
- 7.2 Based on the dot structure of the molecule, determine its electron domain geometry and molecular geometry based on VSEPR theory.
- 7.3 Given the dot structure, identify the hybridization of and geometry about each atom.
- 7.4 Explain the nature of sigma and pi bonding using hybrid atomic orbitals.
- 8.1 Given either mass, volume, or density, be able to calculate an unknown variable through use of the density equation.
- 8.2 Appreciate the utility of density as an intensive and physical property as an identification tool.
- 9.1 Convert and assess temperatures in three scales of measurement: Celsius, Fahrenheit, and Kelvin.
- 9.2 Convert measurements of mass, volume, length between established units of official International (SI), Metric, and American systems.
- 10.1 Calculate heat based on mass, specific heat or heat capacity, and temperature change.
- 10.2 Understand the transfer of heat as it applies to a system and its surroundings, including calorimeters, by calculating one variable in an equation when presented with others including heat, mass, specific heat or heat capacity, and initial and final temperatures.
- 10.3 Define the meaning of work as it relates to energy in all forms: heat, potential and kinetic.
- 10.4 Apply the Law of Conservation of Energy as it pertains to energy exchange in thermochemical reactions.
- 10.5 Convert between SI and American units of heat.

## Student Success in CHEM 1311

As with any three-hour course, expect to spend **at least six hours per week** outside of class reading and studying the material. I will provide assignments to help you use those six 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

Academic dishonesty, which includes but is not limited to, plagiarism, copying, sharing exam information or communicating during an exam, or using unauthorized electronic devices during exams, will not be tolerated. Penalties can include a grade of "0" or "F" on the particular assignment or disciplinary action as determined by rules of the college and are subject to the discretion and judgment of the instructor. 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

The overall course average is determined as follows:

- Four regular exams\* (3 of 4) 60%
- Homework/Class quiz 10%
- Depart. Final Exam\*\*\* 30%
- Extra credit 3%

\*There are 4 regular exams scheduled. The lowest regular exam will be dropped.

\*\* The exams are mandatory

\*\*\* Final Exam is mandatory and **cannot** be dropped.

Letter grade determination is based on the 10-point grading scale:

90 - 100 A

80 - 89 B

70 - 79 C

60 - 69 D

< 60 F, FX

\*FX is a grade assigned to students who attend partially but do not complete the course or fail to withdraw and still appear on the final grade roster and whose resulting average is below 60. This is a new HCC policy and the grade assignment of FX is subject to the instructor's discretion. The four regular exams consist of 2 sections, Part A- multiple choice of 30 questions, each one is 2 points totaling 60 points and Part B- show your work section of 5 questions, each question is 8 points totaling 40 points. HCC does not provide students with Scranton forms. They are sold in campus bookstores.

### **CHEM 1311 Departmental Final Exam**

All students will be required to take a comprehensive departmental final exam consisting of 35 multiple-choice and 6 short answer questions. 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.

#### **Policy Regarding Making Up Missed Assignments**

The departmental final cannot be missed or dropped. Any missed exam from the regular four exams will be automatically counted as your lowest grade and will be your dropped grade.



## Course Calendar

Week #	Lecture
Week 1 1/15	<b>CLASS BEGINS:</b> Syllabus/Introduction Chapter 1: Matter & Measurement
Week 2 1/22	<b>MARTIN LUTHER'S DAY ( JAN 21)</b> Chapter 2: Atoms, Molecules & Ions
Week 3 1/29	Chapter 3: Chemical Reactions & Stoichiometry
Week 4 2/5	Review & <b>Exam 1 (covers ch 1, 2, 3)</b>
Week 5 2/12	Chapter 4: Reactions in Aqueous Solution
Week 6 2/19	<b>PRESIDENT'S DAY ( FEB. 18)</b> Chapter 5: Thermochemistry
Week 7 2/26	Chapter 6: Electronic Structure of Atoms
Week 8 3/5	Review & <b>Exam 2 (covers ch 4, 5, 6)</b>
<b>3/11</b>	<b>SPRING BREAK</b>
Week 9 3/19	Chapter 7: Periodic properties of the Elements
Week 10 3/26	Chapter 8: Basic Concepts of Chemical Bonding
Week 11 4/2	<b>LAST DAY TO WITHDRAW (APRIL 1)</b> Chapter 9: Molecular Geometry and Bonding Theories
Week 12 4/9	Review & <b>Exam 3 (covers ch 7,8,9)</b>
Week 13 4/16	Chapter 10: Gases
<b>4/19</b>	<b>SPRING HOLIDAY</b>
Week 14 4/23	Chapter 11: Liquids and Intermolecular Forces
Week 15 4/30	<b>Exam 4</b>

<b>Week 16</b> 5/7	<b>Departmental Final Exam</b>
5/12	<b>SEMESTER ENDS</b>

### 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/>

### EGLS<sup>3</sup>

The EGLS<sup>3</sup> (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. EGLS<sup>3</sup> 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  
Police Services & Campus Safety  
Student Life at HCC  
Student Rights and Responsibilities  
Student Services  
Testing  
Transfer Planning  
Veteran Services

## 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/>

## 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](mailto:Institutional.Equity@hccs.edu)

<http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/>

Chemistry Department Chair

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