



Division of Natural Sciences and Geology

Department of Chemistry

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

CHEM 1311: General Chemistry I | Lecture | #19676

Fall 2018 | 16 Weeks (1.14.2019-5.12.2019) In-Person | Alief | Tue, Thu 12.30 p.m.-1.50 p.m. 3-hour lecture course | 48 hours per semester

Instructor Contact Information

Instructor: Gomathi Ramanoudjame, Ph.D.
HCC Email: gomathi.ramanoudjame@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. 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. Chemistry sometimes is called the "central science" because it connects other sciences to each other, such as biology, physics, geology, and environmental science.

My Personal Welcome

Welcome to Chemistry—I'm delighted that you have chosen this course. One of my passions is the elucidation of general chemistry concepts. 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

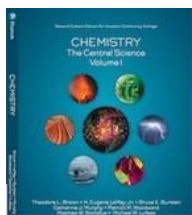
CHEM 1411 requires college-level reading and writing skills. Research indicates that you are most likely to succeed if you have already taken and passed Reading 0342, Math 0312 and Writing 0310 / 0349 or Math 0312 with INRW 0420. The minimum requirements for enrollment in CHEM 1311 include placement 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 will use [Eagle Online Canvas](#) to supplement in-class assignments, exams, and activities. Online Graded assignments will be assigned. These will be uploaded on eagle online. 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, Bursten, Murphy, Woodward, Stoltzfus. (2015). *Chemistry : The Central Science*, 14th 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. Scantrons
3. 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](#) 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 peerassisted 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.

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 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 viceversa.
- 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

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

Examinations will consist of four non-cumulative regular exams. Make-up exams will not normally be given. Time allowed for the exams is one hour. Scantron is required for all exams. No bathroom breaks during an exam. HCC does not provide students with Scantron 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.

Written Assignment

Each chapter assignment is due before the start of the next chapter. Any assignment turned in late will be given reduced points.

End of Chapter Homework Problems

Chapter 1: 1.10; 1.16; 1.20; 1.67.
Chapter 2: 2.24; 2.30; 2.36; 2.42; 2.64.
Chapter 3: 3.12; 3.24; 3.46; 3.68.
Chapter 4: 4.18; 4.26; 4.52.
Chapter 5: 5.44; 5.64; 5.74.
Chapter 6: 6.17; 6.20- a, b, c, d.
Chapter 7: 7.18; 7.28; 7.50; 7.66; 7.72.
Chapter 8: 8.14; 8.16; 8.26; 8.36; 8.60; 8.69.
Chapter 9: 9.30; 9.60; 9.62.
Chapter 10: 10.34 - a, b, c, d.

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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 makeups" for exams since instructor will drop the lowest exam between Exams 1, 2, 3 and 4. In the event of missing a regular exam, that exam will be dropped.

Grading Formula

The overall score is based on the following:

- Three regular exams = 60%
- Assignments = 15%
- Final Exam = 25%

Course Grade = $0.60(\text{Average of three regular exams}) + 0.20(\text{Laboratory grade}) + 0.20(\text{Final Exam})$

Quizzes and/or homework will be part of the grade of a non-cumulative exam.

Grade	%
A	100-90
B	89-80
C	79-70
D	69-60
F	<59

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

Course Calendar

Week #	Lecture
Week 1 Jan 15,17	Syllabus / Introduction Chapter 1: Matter & Measurement
Week 2 Jan 22,24	Chapter 2: Atoms, Molecules & Ions
Week 3 Jan 29,31	Chapter 3: Chemical Reactions & Stoichiometry
Week 4 Feb 5,7	Chapter 3 cont..
Week 5 Feb 12,14	Review for exam 1, Exam 1
Week 6 Feb 19,21	Chapter 4: Reactions in Aqueous Solution
Week 7 Feb 26,28	Chapter 5: Thermochemistry
Week 8 Mar 5,7	Review , Exam 2
Week 9 Mar 19, 21	Chapter 6: Electronic Structure of Atoms
Week 10 Mar 26, 28	Chapter 7: Periodic properties of the Elements
Week 11 Apr 2,4	Chapter 8: Basic Concepts of Chemical Bonding
Week 12 Apr 9,11	Review, Exam 3
Week 13 Apr 16,18	Chapter 9: Molecular Geometry and Bonding Theories
Week 14 Apr 23, 25	Chapter 10: Gases
Week 15 Apr 30, May 2	Chapter 11: Liquids and Intermolecular Forces, Exam 4
Week 16 May 7	Final Exam

Important dates:

Mar 11-17: Spring break

Apr 1: Last day to withdraw before 4.30pm.

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

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&> [Campus Carry Link](#)

Here's the link to the HCC information about Campus Carry:

<http://www.hccs.edu/departments/police/campus-carry/>

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/currentstudents/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/financialaid/financial-coach/>

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.

This will enable HCC to provide any resources that HCC may possess.

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/>

Department Chair Contact Information

Chemistry Department Chair

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