

Division of Natural Sciences and Horticulture

Department of Chemistry

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

CHEM 1311: General Chemistry I | Lecture | # 24306

Fall 2020| 16 Weeks (8.24.2020-12.13.2020)
Online | 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 aim to answer student e-mails in a timely manner. Certain e-mails (for example, which require explanation of chapter material) do take longer to answer. Please note: Course correspondence will be sent to your HCC's student email account so please check it regularly. Do not wait until the last minute to make any important or urgent request and do allow sufficient time when requesting for any accommodations.

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 <u>Eagle ID</u> and activate it now. You may also use Canvas Inbox to communicate.

This is a synchronous online class (online on a schedule). Students will meet with the instructor online during class time.

What's Exciting about This Course

Chemistry is everywhere in the world around you! It's in the food you eat, clothes you wear, water you drink, medicines, air, cleaners... you name it. Chemistry sometimes is called the "central science" because it connects other sciences to each other, such as biology, physics,

geology, and environmental science. Here are some of the best reasons to study chemistry. Chemistry helps you to understand the world around you. Why do leaves change color in the fall? Why are plants green? How is cheese made? What is in soap and how does it clean? These are all questions that can be answered chemistry. Basic knowledge of chemistry helps you to read and understand product labels.

My Personal Welcome

Welcome to General Chemistry I-I'm delighted that you have chosen this course. 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.

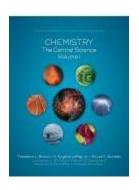
Prerequisites and/or Co-Requisites

Eagle Online Canvas Learning Management System

This section of CHEM 1311 will use <u>Eagle Online Canvas</u> as the course website where in-class assignments, exams, and activities will be posted. HCCS Open Lab locations may be used to access the Internet and Eagle Online Canvas. It is recommended that you **USE <u>FIREFOX</u> OR CHROME AS YOUR BROWSER**.

Students will be presented with lecture content online. The instructor will be available to answer questions and supplement online content upon student request. It is the student's responsibility to log onto the Eagle Online on a regular basis (at least 2 times per day) to check for announcements, access course materials, and check email. This is also considered by the College a form of attendance as well as participation in the course. Additionally, students should confirm their correct email address is linked to Eagle Online so that they may send AND receive correspondence from the instructor. It is highly recommended to download instructional materials well in advance in the case of technical issues so that you are always prepared for class. You may also contact the instructor for material in the event that your Eagle Online access is intermittently restricted due to technical or enrollment issues. Students who no longer appear on the class roster because they have been dropped (for lack of attendance, non-payment, financial aid issues, Etc.) will not have access to Canvas or be able to complete assignments/earn grades.

Instructional Materials



Textbook Information

1. Softcover Volume I for CHEM 1311 only ISBN: 978-1-323-85000-8

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

OR

Online version of the <u>eText for Brown, LeMay, Bursten,</u>

<u>Chemistry: The Central Science, Custom Edition for Houston</u>

<u>Community College, Volume 1</u> can be purchased along with My Lab and Mastering access code.

- 2. A Nonprogrammable scientific calculator (no graphing calculators permitted in testing)
- 3. Web-cam and internet enabled computer (required)

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 <u>Canvas</u>
- Click "My Lab and Mastering"
- Click "Open My Lab & 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

My Lab & Mastering

My Lab & Mastering will be used for Chapter homework's. Students must purchase the access code for My Lab & Mastering. The access code also includes the <u>e-text for Brown, Lemay, Bursten, Chemistry: The Central Science, Custom Edition for Houston Community College, Volume 1</u> is a convenient, online version of the textbook.



Tutoring

HCC provides free, confidential, and convenient academic support to HCC students in an online environment. 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.

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

NOTE: This is an online. Guided studies in the form of modules that link to notes, slides, and practice problems are located online in Canvas.

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.

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 <u>Learning Objectives for CHEM 1311</u>. 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 class 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 and discussions
- 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

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

- 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 <u>HCCS Student</u> Handbook

Academic Integrity

You are expected to be familiar with the College'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.

"Cheating" includes but is not limited to:

- Copying from another student's work
- Using unauthorized materials including electronic devices for tests, assignments, and classroom activities
- Collaborating with another student during a test without authority
- Knowingly using, buying, selling, stealing, transporting or soliciting in whole or part the contents of an administered test
- Bribing another person to obtain a test that is to be administered
- "Plagiarism" means using another person's words or ideas as one's own without properly citing where and from whom you obtained the original work.
- "Collusion" means the unauthorized collaboration with another person in preparing written work submitted for credit.
- Other actions may constitute scholastic dishonesty. This is not an exhaustive list.

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

Exams and Make up Policy: In all, we cover 11 chapters in this course. In the course, there are four non-cumulative regular multiple-choice exams taken ONLINE in Canvas, with 25-45 equally - weighted questions each. Additionally, there is a mandatory comprehensive final (more information below) to be taken. Make-up exams will NOT be given, so please make every reasonable effort to take the exams on their scheduled dates. All exams times are set to two hours. Note: The final exam may not substitute or replace your lowest exam score, including a missed exam (grade zero). One of your lowest exam grade will be dropped. If you miss an exam for any reason that will the grade that will be dropped. This is allowed for only ONE exam. All other missed exams will result in a grade of zero. Exam coverage and dates for testing windows are below. Testing for Exam 1, 2, 3 and 4 opens on Saturday mornings at 12 AM and ends on Sunday evenings at 11:59 PM during the testing windows. Given this large testing window, no extensions will be provided.

Tentative Testing Periods and Exam Coverage:

Exam 1	Online	Chapters 1,2,3	9/15-9/17
Exam 2	Online	Chapters 4,5	10/6-10/8
Exam 3	Online	Chapters 6, 7,8	11/3-11/5
Exam 4	Online	Chapters 9,10,11	11/23-11/25
Final Exam	ТВА	Chapters 1-11 (comprehensive)	12/11-12/13

It is the Program's hope that providing nontraditional modes of instruction by removing barriers and increasing access to academic resources such as online testing creates more opportunity for students to complete courses and work towards achieving their academic goals. However, some safeguards are needed to ensure that the rigor and academic integrity of the courses are also maintained for the benefit of all students and instructors. Therefore, for the 4 regular exams, which are to be taken online, students are asked to download the Respondus Lockdown Browser from Canvas and install it onto their web-cam enabled

computer prior to the first testing period. Students will only be able to access exams via the Respondus browser and monitor and no other applications should be open or utilized. Exams require web-cams for testing purposes or for identification to be shown to the camera prior to testing. The program is enabled to detect unusual activity and flag it so that the instructor may review video of testing, such as the presence of additional devices, leaving the testing area, etc. I would like to foster an environment of mutual trust and respect and hope that those safeguards do not become necessary. However, if the need arises, they may be implemented. I want everyone to do well and am here to support each of you! Your learning and success is a priority, and I want everyone to have an equal opportunity at that. Online exams are to be taken by the student himself/herself without any collaboration with another individual or reference, written, electronic, or online. No communication, verbal, nonverbal, or electronic may be made. All cell phones and communication devices are prohibited. Ensure you have a quite space to test, without disruption, have used bathroom facilities, and have a dependable internet connection so that you do not have any issues in testing or get flagged. Additionally, exams are timed so you want to ensure you manage it properly. Graphing calculators are also not permitted during testing.

CHEM 1311 Departmental Final Exam

All students will be required to take an online comprehensive final exam consisting of questions from chapters 1-11. All the information students need to prepare for the exam is in the review given in class or the <u>Final Exam Handb.ook</u>.

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.

For your convenience, windows for final exam testing over 2 days have been set up.

Policy Regarding Making up Missed Assignments

No make-ups for exams, since instructor drops the lowest grade from the regular exams 1, 2, and 4.

Grading Formula

Exam 1 + Exam 2 + Exam 3	60%
Homework/Quiz/Assignments	15%
Final Exam	25%

HCCS Grading Scale:

A = 100 - 90	4 points per semester hour
A - 100 - 30	+ DUILLS DEL SEILLESLEI HOUL

3 points per semester hour
2 points per semester hour
1 point per semester hour
0 points per semester hour
0 points per semester hour
0 points per semester hour
0 points per semester hour AUD
0 points per semester hour

IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA. The grade of "I" (Incomplete) is conditional. An incomplete grade can be awarded under extraordinary circumstances, only when at least 90% of the course has been completed. For example, at the end of the semester, if a student misses the final exam due to sudden illness, family emergency, or other extenuating circumstances, they can request for an incomplete grade *in writing* with proper documentation. An Incomplete grade cannot be given to a student to gain more time to study or retake the entire course to improve their grade. If you receive an "I" you must arrange with the instructor to complete the course work within six months. After the deadline, the "I" becomes an "F". All "I" designations must be changed to grades prior to graduation. The changed grade will appear on your record as "I"/Grade (example: "I/A"). For ADA accommodations it's the responsibility of the student to submit an approved accommodation letter to the instructor.

HCC Grading Scale can be found on this site under HCC Grading System: http://www.hccs.edu/about-hcc/procedures/student-procedures/

Course Calendar

Week #	Lectures	Exams
Week 1 Aug 24	Syllabus / Introduction Chapter 1: Matter & Measurement	
Week 2 Aug 31	Chapter 2: Atoms, Molecules & Ions	
Week 3 Sep 7	Chapter 3: Chemical Reactions & Stoichiometry	
Week 4 Sep 14	Review chapters 1,2 and 3 and Exam 1	Exam1 9/15-9/17
Week 5 Sep 21	Chapter 4: Reactions in Aqueous Solution	
Week 6 Sep 28	Chapter 5: Gases	

Week 7 Oct 5	Review chapters 4 and 5 Exam 2	Exam 2 10/6-10/8
Week 8 Oct 12	Chapter 6: Thermochemistry	
Week 9 Oct 19	Chapter 7: Electronic Structure of Atoms	
Week 10 Oct 26	Chapter 8: Periodic properties of the Elements	
Week 11 Nov 2	Review chapters 6,7 and 8 Exam 3: (Chapters 6,7, 8)	Exam 3 11/3-11/5
Week 12 Nov 9	Chapter 9: Basic Concepts of Chemical Bonding	
Week 13 Nov 16	Chapter 10 : Molecular Geometry and Bonding Theories	
Week 14 Nov 23	Chapter 11 : Liquids and intermolecular forces Exam 4: (Chapters 9,10,11)	Exam 4 11/23-11/25
Week 15 Nov 30	Review all chapters for comprehensive Final Exam	
Week 15 Dec 7	Final Exam	FINAL EXAM 12/11-12/13

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, Assignments, etc.

Look in Eagle Online Canvas for the scoring rubrics for assignment, 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&

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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/

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/

Chemistry Department Chair

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