



Division of Natural Sciences and Geology

Department of Chemistry

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

CHEM 1111: General Chemistry I | Lab | #15422

Fall 2019 | 16 Weeks (8-26-2019 to 12-15-2019)

In-Person | Stafford Campus- Scarcella Building- Room S109

Tuesday 6:00 p.m. - 8:50 p.m. 3-hour Lab course

Instructor Contact Information

Instructor: Gomathi Ramanoudjame

HCC Email: gomathi.ramanoudjame@hccs.edu

Preferred method of Contact: email

I will respond to emails within 24 hours Monday through Friday; I will reply to weekend messages on Monday mornings.

Chemistry Department Chairman: Dr. Emmanuel Ewane
Contact Information

Office Phone: 713-718-5414

HCC Email: Emmanuel.ewane@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.

My Personal Welcome

Welcome to General Chemistry I Lab – Chem1111— 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. So please visit me or contact me whenever you have a question.

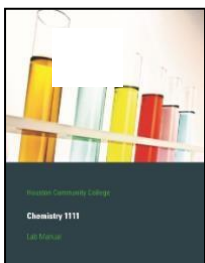
Prerequisites and/or Co-Requisites

Must have passed CHEM 1311/1411 with a grade of D (or higher) or co-enroll in CHEM 1111 as a co-requisite. Please carefully read and consider the repeater policy in the [HCCS Student Handbook](#).

Eagle Online Canvas Learning Management System

This section of CHEM 1111 will use Eagle Online Canvas to supplement laboratory exercises in the form of handouts and other useful learning supplements. 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



LAB MANUAL: HCC Faculty (2016). *Lab Manual for CHEM 1111*
ISBN - CHEM 1111: 9781323961810 **(Required)**

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 1111

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 1111

Course Student Learning Outcomes (CSLOs) for CHEM 1111 upon completion of CHEM 1111, the student will be able to:

1. Learn Proper Safety Practice and Measures in the chemistry laboratory.
2. Practice Basic Lab Techniques of Measurement and Conversion.
3. Perform separation of mixtures using proper technique.
4. Identify physical properties.
5. Observe various chemical reactions and write supporting chemical equations.
6. Calculate empirical and molecular formulas and reaction yield.
7. Apply thermochemical principles to evaluate energy relationships based on specific heat, calorimetry, and temperature changes.

8. 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.
9. 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.

Learning Objectives for CHEM 1111

Learning Objectives for CHEM 1111 Learning Objectives for each CSLO can be found at Learning Objectives for CHEM 1311.

SLO1. Learn Proper Safety Practice and Measures in the chemistry laboratory.

1.1 Observe and learn proper reagent and glass disposal. 1.2 Be aware of common safety practices and locations of safety equipment throughout the lab.

SLO2. Practice Basic Lab Techniques of Measurement and Conversion. 2.1 Identify proper equipment used for various measurements of temperature, mass, length, and volume. 2.2 Convert and assess temperatures in three scales of measurement: Celsius, Fahrenheit, and Kelvin. 2.3 Convert measurements of mass, volume, length between established units of official International (SI), Metric, and American systems. 2.4 Calculate density based on measurements of mass and volume.

SLO3: Perform separation of mixtures using proper technique. 3.1 Determine the best means and technique of separating components of a mixture based on physical properties. 3.2 Calculate percentage composition and recovery for components of a mixture or a hydrate. 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.

SLO4: Identify physical properties. 4.1 Observe physical properties of solubility, density, boiling and melting point of known substances and utilize them to identify unknowns.

SLO5: Observe various chemical reactions and write supporting chemical equations. 5.1 Perform single and double displacement precipitation, oxidation-reduction, and neutralization reactions and write balanced corresponding chemical equations. 5.2 Predict reactivity of metals based on the activity series.

SLO6: Calculate empirical and molecular formulas and reaction yield. 6.1 Determine ratios using mass and mole values to determine empirical and molecular formula 6.2 Identify the limiting reagent in a reaction and calculate reaction yield

SLO 7: Apply thermochemical principles to evaluate energy relationships based on specific heat, calorimetry, and temperature changes. 7.1 Calculate heat based on mass, specific heat or heat capacity, and temperature change. 7.2 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.

SLO 8. 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. 8.1 Utilize mass, volume, pressure and amount of a volatile gas to determine its molecular weight using the Ideal Gas Law.

SLO 9. 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. 9.1 Draw the Lewis dot structure of molecules containing two or more atoms. 9.2 Based on the dot structure of the molecule, determine its electron domain geometry and molecular geometry based on VSEPR theory. 9.3

Given the dot structure, identify the hybridization of and geometry about each atom.
9.4 Explain the nature of sigma and pi bonding using hybrid atomic orbitals. 10.5
Convert between SI and American units of heat.

Student Success in CHEM 1111

As with any three-hour course, expect to spend at least six hours per week outside of class reading and studying the material. The laboratory report calculations, equations etc. and post-laboratory questions must be completed at home. Successful completion of this course requires attending all laboratory sessions regularly, completing lab reports (prelaboratory exercise + report form + post-laboratory exercise) and participating in laboratory experiments. 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

"Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Disciplinary proceedings may be initiated by the college system against a student accused of scholastic dishonesty. Penalties can include a grade of "0" or "F" on the particular assignment, failure in the course, academic probation, or even dismissal from the college. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion." In this class, the penalty for willful cheating on exams is a grade of F in the course.

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. Scholastic Dishonesty will result in a referral to the Dean of Student Services. See the link below for details.

Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance):

<http://www.hccs.edu/about-hcc/procedures/student-rights-policies-procedures/student-procedures/>

Laboratory Policy

Lab safety will be reviewed before the first lab. Each student will then sign a statement affirming his or her commitment to following safe procedures in the laboratory, and turn the form in to the instructor. Be especially aware of the need for adequate eye protection and proper dress in the laboratory. **Safety glasses or goggles must be worn at all times during the laboratory period.** **If you are not appropriately dressed or do not wear the safety goggles, you will be asked to leave the lab and a grade of zero will be recorded for the laboratory exercise.**

Normally, experiments will be performed in groups of two students. **Students should arrive at the lab on time with their lab manual.** After you have finished the experiment, show me your results to examine briefly, and I will initial your lab report before you leave. **Laboratory reports are due on the next lab day.** Each report must be done individually, but of course you can work with your lab partners on it. Each report will be graded on a 100-point basis. Come to lab prepared. Read through the experiment beforehand and do the pre-lab questions at the end of the lab report. You will be much better organized when doing the experiments, and your laboratory experience will be much more rewarding!

NOTE for pregnant students and students with health concerns as it pertains to the course, particularly lab: Please visit with the Abilities Service counselor to explore assistance and options for pregnant students and students with health concerns. The instructor will be happy to abide with counselor recommendations. With regards to labs and chemicals utilized, please consult with your physician (you may take your lab manual which lists the chemicals that will be used for the experiments conducted in class as a reference to your doctor) as the instructor is not as qualified on the subject and therefore cannot make any recommendations. The instructor will comply with doctor's orders after the accommodation has been submitted and approved by the counselor and the Department Chair.

Policy Regarding Making Up Missed Assignments

- There are no make-up labs. If you miss a laboratory session, you are not permitted to complete the lab at a different time or with a different instructor. • However, if you have to miss a lab due to a valid reason, a grade of zero will be inputted and the lowest lab grade will be dropped before calculating the final lab average. This is permitted only for one missing/absent laboratory work. If you miss more than one lab, make-up policy (as mentioned above) is permitted for one lab and a grade of zero will be recorded for all other

missing lab work and will not be dropped while calculating the lab average. • Students who have been present for all lab sessions, one low lab grade will be dropped before calculating the final lab average.

Laboratory Safety Guidelines (adapted from the Safety Contract)

- Need to conduct oneself in a professional manner, respecting the safety of both oneself and of others in the laboratory.
- Need to wear proper and approved safety glasses or goggles in the laboratory at all times.
- Need to wear sensible clothing and tie back long hair in the laboratory. Understand that pen-toed shoes pose a hazard during laboratory classes and that contact lenses are an added safety risk.
- Need to keep bench area free of clutter during an experiment.
- Need to know that food or drink is not permitted in the laboratory.
- Need to know that makeup should not be applied while in the laboratory.
- Need to be aware of the location of safety equipment such as fire extinguishers, eye wash stations, fire blankets, and first aid kits, and exits. • Need to read the assigned lab prior to attending class.
- Need to carefully read the labels on all chemical containers before using their contents, remove a small amount of reagent properly if needed, do not pour back the unused chemicals into the container.
- Need to dispose of chemicals as directed by the instructor only. Need to know that one should not pour anything down the sink without prior instructions.
- Need to know one should never inhale fumes emitted during an experiment and use the fume hood when instructed to do so.
- Need to report any accident immediately to the instructor, including chemical spills.
- Need to dispose broken glass only in the designated container for broken glass.
- Need to clean the work area and all glassware before leaving the laboratory.
- Need to wash hands before leaving the laboratory.

Grading Formula

Your grade in this lab is calculated based on the grades you receive on the lab reports and also on the lab final exam.

12 Lab Reports (dropping the lowest grade out of 13 labs performed) 80%
Lab Final Exam 20%

Grade	Points
A	100 – 90
B	89 – 80
C	79 – 70
D	69 – 60
F	59 and below

[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/)

HCC Eagle Early Alert: The HCC Eagle Alert program is designed to provide timely intervention for students at risk of dropout or academic failure. On a regular basis an early alert for the areas of concern by the instructor will be conducted. Once the faculty sends the early alert, an email notification is sent to the student and the campus advising manager. The student will then need to set up an appointment with the advisor to discuss helpful resources such as tutoring, etc.

Incomplete Policy

In order to receive a grade of Incomplete ("I"), a student must have completed at least 85% of the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

Course Calendar

	Lab
Week #1	Syllabus Overview/Safety Video/Safety Quiz (Experiment 1)
Week #2	Basic Laboratory Techniques Answer Pre-lab due before lab session.
Week #3	Identification of Substances by Physical Properties Pre-lab due before lab session Completed Lab report for Week 2 Lab is due (pre-lab + report form + post-lab)
Week #4	Separation of the Components of a mixture Answer Pre-lab due before lab session. Week 3 Lab report is due (pre-lab + report form + post-lab)
Week #5	Chemical Reactions Answer the pre lab questions before lab session Week 4 lab report is due
Week #6	Chemical Formulas Answer the Pre-lab questions before lab session Week 5 report due (pre-lab + report form + post-lab)
Week #7	Chemical Reactions of Copper and Percent Yield Answer the Pre-lab questions before lab session Week 6 report due (pre-lab + report form + post-lab)
Week #8	Reactions in Aqueous Solutions: Metathesis Reactions and net Ionic Equations- Answer the Pre-lab questions before lab session Week 7 report due (pre-lab + report form + post-lab)

Week #9	Activity Series Answer the Pre-lab questions before lab session Week 8 report due (pre-lab + report form + post-lab)
Week #10	Behavior of Gases/ *Gas Law Assessment Answer the Pre-lab questions before lab session Week 9 report due (pre-lab + report form + post-lab)
Week #11	Heat of Acid-Base Neutralization Answer the Pre-lab questions before lab session Week 10 report due (pre-lab + report form + post-lab)
Week #12	Molecular Geometries of Covalent Molecules: Lewis Structures and the VSPER Model Answer the Pre-lab questions before lab session Week 11 report due (pre-lab + report form + post-lab)
Week #13	Titration of Acids and Bases Answer the Pre-lab questions before lab session Week 12 report due (pre-lab + report form + post-lab)
Week #14	Solubility and the Effect of Temperature on Solubility Answer the Pre-lab questions before lab session Week 13 report due (pre-lab + report form + post-lab)
Week #15	Nomenclature Lab* Week 14 report due (pre-lab + report form + post-lab)
Week #16	Lab Final Exam
*	For the labs with the *, a copy of the lab procedure will be provided.

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/>

Attendance Procedures

You are expected to attend all lecture classes and labs regularly. You are also responsible for materials covered during your absences. Instructors may be willing to consult with you for make-up assignments, but it is your responsibility to contact the instructor. Class attendance is monitored daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. You may be dropped from a course after accumulating absences in excess of 12.5 percent of the total hours of instruction. **Absences will be excused for illness accompanying a doctor's note, death in the family or other reasons approved by the instructor.**

Departments and programs governed by accreditation or certification standards may have different attendance policies. Administrative drops are at the discretion of the instructor. Failure to withdraw officially can result in a grade of "F" in the course.

Electronic Devices

No cellphone use is allowed during lab .If you are on your cellphone in the lab, you will be asked to leave the lab. Being on your cellphone in the lab is a major safety issue and will not be toletated.

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/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/>

Campus Carry Link

Here's the link to the HCC information about Campus Carry:
<http://www.hccs.edu/departments/police/campus-carry/>

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.

Chemistry Department Chair

Dr. Emmanuel Ewane, emmanuel.ewane@hccs.edu; 713-718-5414