



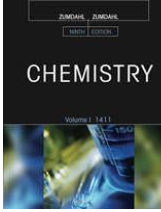
HOUSTON COMMUNITY COLLEGE SOUTHWEST
COURSE OUTLINE FOR CHEM 1411 – GENERAL CHEMISTRY I
Summer I, 2016
Class Number 14939

Discipline/Program	Chemistry
Course Level	First Year (Freshman)
Course Title	General Chemistry I
Course Rubric and Number	CHEM 1411
Semester with Course Reference Number (CRN)	Summer I, 2016 CRN 14939
Course Location/Times	Stafford campus, Scarcella building <u>Lecture:</u> Mon & Wed 12:00pm – 4:45pm in Room W121 <u>Lab / Lecture:</u> Tue & Thu 12:00pm – 4:45pm in Room S109
Course Semester Credit Hours (SCH) (lecture, lab)	4 (3 lecture, 3 lab)
Total Course Contact Hours	96
Course Length (number of weeks)	5
Type of Instruction	In-person
Instructor contact information (phone number and email address)	Professor Mounia Elamrani Office Phone: please email E-mail: mounia.elamrani@hccs.edu Learning Web: http://learning.hccs.edu/faculty/mounia.elamrani
Office Location and Hours	Email only
Course Description: ACGM or WECM	General principles, problems, fundamental laws, and theories. Course content provides a foundation for work in advanced chemistry and related sciences.
Course Description: HCC Catalog Description	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 Course. Note: Only one of CHEM 1305, CHEM 1405, and/or CHEM 1411 can be used toward associate degree natural science requirements. Only one of the three will count as Natural Science core; the others may count as electives in the degree plan.
Course Prerequisite(s)	One year of high school Chemistry; Must be placed into college-level reading (or take GUST 0342 as a co-requisite) and be placed into MATH 0312 (or higher) and be placed into college-level writing (or take ENGL 0310/0349 as a corequisite).
Academic Discipline Program Learning Outcomes	1. To provide the student a basic and practical understanding of chemistry (formulas, reactions, and calculations) and recognize its relevance in our daily lives.

	2. To prepare our students to meet with success in higher level chemistry and other science courses when they transfer to four-year universities. 3. To prepare our students for professional programs requiring a mastery of General Chemistry and Organic Chemistry, such as Nursing, Medicine, Dentistry, and Pharmacy. 4. To enhance class lectures with a meaningful, hands-on laboratory experience involving making measurements, observing reactions, evaluating the results and drawing conclusions with the involvement of lab group or other class members.
Course Student Learning Outcomes (SLO)	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.
Learning Objectives (Numbering system linked to SLO)	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, and 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.
SCANS and/or Core Curriculum Competencies	Reading, Speaking/Listening, Critical Thinking, Computer/Information Literacy
EGLS: Evaluation of Greater Learning Student Survey	At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.
Instructional Methods	Standard class lectures using the whiteboard with occasional use of class notes in Microsoft word files.
Course Calendar (Tentative)	See last page of the syllabus
Student Assignments	Outside of laboratory reports, special assignments are normally not required. I will recommend practice problems but these are not graded. Practice problems, such as those at the end of the chapters, are highly beneficial, indeed essential,

	to learning chemistry. I recommend that you work as many of the even-numbered end of chapter problems as you can (these have answers in the back of your textbook); similar additional problems follow in the "Additional Problems" section. Get a spiral leaf notebook just for working chemistry problems. That will keep your work more organized and you (or I) can easily review your work.
Student Assessment(s)	The overall score is based on the following: • Three exams 50% • Laboratory 20% • Practice Problems 10% • Final Exam 20% Overall Score = $0.50 * (\text{Exams Average}) + 0.20 * (\text{Labs Average}) + 0.10 * (\text{Average Problems}) + 0.20 * (\text{Final Exam})$
Instructor's Requirements	<u>Laboratory Policy</u> • 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. • Safety glasses or goggles must be worn at all times during the lab • Experiments will be performed in groups of two students. • Students should arrive at the lab on time with their lab manual and have completed the prelab questions • After you finish the experiment, clean up and I will initial your report before you get to leave. • Laboratory reports are due on the next lab day • 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. <u>Exams and Make-up Policy</u> • Examinations will consist of three non-cumulative regular exams (50%) plus a comprehensive final (20%). • Programmable calculators are not allowed during exams! The department has calculators that you can use on test days • Make-up exams will not normally be given, so make every effort to take the exams on their scheduled dates. In the event that you must miss a regular exam, I will count the grade made on the final exam as the grade for the missed exam (for one missed exam only), and calculate the final course grade accordingly. If you do not miss any of the regular exams, I will replace your lowest exam score with your final exam score if the final exam grade is higher. This is intended to provide you a "second chance" if you do not do well on a particular exam. Please note that all students are required to take the final (no student can be exempted).
Program/Discipline Requirements	At the program level, the Chemistry Discipline strives to accomplish the Program Learning Outcomes, Student Learning Outcomes, and Learning Objectives as described above. We desire that you receive a challenging and rewarding experience in your chemistry classes at HCC which will prepare you well for future chemistry and related science courses that you may take in the future.

HCC Grading Scale	A = 100 – 90;.....4 points per semester hour B = 89 – 80:3 points per semester hour C = 79 – 70:2 points per semester hour D = 69 – 60:1 point per semester hour 59 and below = F.....0 points per semester hour IP (In Progress)0 points per semester hour W(Withdrawn).....0 points per semester hour I (Incomplete).....0 points per semester hour AUD (Audit)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.
Instructor Grading Criteria	See the above descriptions of the lab, exams, quizzes, and final. The course grade is based on these four criteria according to the Assessment section above.
Instructional Materials	<u>Textbook</u>  Chemistry, 9th Ed., Volume I, by Steven and Susan Zumdahl. Brooks/Cole Cengage Learning: 2014. ISBN-13 978-1-305-29970-2 (Textbook with OWL Passcode) Softcover Custom Edition available at HCC bookstores) <u>Laboratory Manual</u>  Laboratory Manual for CHEM 1411, Blue Door Publishing: 2011 :ISBN-13: 978-1-59984-380-3 <u>Free Chemistry e-Book at OpenStax.org</u>
HCC Policy Statement: ADA Academic Honesty Student attendance 3-peaters Withdrawal deadline	Access Student Services Policies on their Web site: http://hccs.edu/student-rights <u>Disability Support Services (DSS)</u> “Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Faculty are authorized to provide only the accommodations requested by the Disability Support Services Office.” If you have any special needs or disabilities which may affect your ability to

succeed in college classes or participate in any college programs or activities, please contact the DSS office for assistance. At Southwest College, contact Dr. Becky Hauri, 713-718-7909. Contact numbers for the other HCC colleges are found in the Annual Schedule of Classes, and more information is posted at the HCC web site at [Disability Services](#).

Academic Honesty

“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**. This is the standard policy of the Physical Sciences department at Southwest College.

Attendance Policy

The HCCS attendance policy is stated as follows: “Students are expected to attend classes regularly. Students are responsible for materials covered during their absences, and it is the student's responsibility to consult with instructors for make-up assignments. Class attendance is checked daily by instructors. *Although it is the responsibility of the student to drop a course for non-attendance, the instructor has full authority to drop a student for excessive absences. A student may be dropped from a course for excessive absences after the student has accumulated absences in excess of 12.5% of the hours of instruction (including lecture and laboratory time).*”

Note that 12.5% is approximately 2 classes or labs for a 4 semester hour course, such as this one, which meets 2 times per week in a 16 week semester. If circumstances significantly prevent you from attending classes, please inform me. I realize that sometimes outside circumstances can interfere with school, and I will try to be as accommodating as possible, but please be aware of the attendance policy.

Policy Regarding Multiple Repeats of a Course

“NOTICE: Students who repeat a course three or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.”

	<u>Last Day for Administrative and Student Withdrawals</u> For 5-week Summer classes, this date is Jun. 27. I urge any student who is contemplating withdrawing from the class to see me first! You may be doing better than you think. Either way, I want to be accessible and supportive. I do not believe in "weed out" classes, and I consider you to be much more than just a name or number! Note my office hours above; if you need assistance, I'm here to help. 🔗 <u>Policy Regarding Withdrawals</u> 🔗 Students desiring to withdraw from a class must do so by the above withdrawal date by filling out a withdrawal form at the registrar's office. <i>After this date, instructors can no longer enter a grade of "W" for the course for any reason.</i>
Distance Education and/or Continuing Education Policies	Access DE Policies on their Web site: http://de.hccs.edu/Distance_Ed/DE_Home/faculty_resources/PDFs/DE_Syllabus.pdf Access CE Policies on their Web site: http://hccs.edu/CE-student-guidelines
Test Bank	Extra practice problems by chapter, sample exams, and sample finals may be found at the following web sites: http://learning.hccs.edu/faculty/komala.krishnaswamy and http://wc2.hccs.edu/pahlavan. The course is <u>web-enhanced</u> and will have further resources available on Canvas LMS
Scoring Rubrics	Regular exams and the final will consist of multiple-choice and show-your-work questions. The regular exams will include a 10 points Bonus question The lab reports are graded on the basis of completeness, neatness, and the correctness of the calculations tied to the experimental result. Each report is graded on a 100 points basis.
Sample Assignments	N/A
Sample Instructional Methods/Activities	See the PowerPoints at my Learning Web site for an overview of the content of each chapter: http://learning.hccs.edu/faculty/komala.krishnaswamy

Weekly Schedule

Note that the dates of starting and finishing individual chapters are approximate, as some material may be covered on exam and lab days if necessary. Schedule is subject to change by instructor who will notify students accordingly.

Wk	Date	Activity
1	June 6	Introduction & Chapter 1 – Chemical Foundations
	June 7	Chapter 2 – Atoms, Molecules, and Ions & Safety video
	June 8	Chapter 3 - Stoichiometry
	June 9	Chapter 4a – Types of Chemical Reactions... Lab #1: Measurements
2	June 13	Chapter 4b – Types of Chemical Reactions... & Practice Session (1-3)
	June 14	Chapter 5a – Gases & Lab #2 - Separation of Mixtures
	June 15	Chapter 5b – Gases & Chapter 6a – Thermochemistry
	June 16	Exam #1 (Chapters 1 to 3) & Lab # 5 – Empirical Formula of an Oxide
3	June 20	Chapter 6b – Thermochemistry & Chapter & Practice Session (4-6)
	June 21	Chapter 7a – Atomic Structure and Periodicity & Lab #8 Reactions in Aqueous...
	June 22	Chapter 7b – Atomic Structure and Periodicity & 8a – Bonding General Concepts
	June 23	Exam #2 (Chapters 4 to 6) & Lab # 9 Reactivity of Metals
4	June 27	Chapter 8b – Bonding General Concepts & Chapter 9a – Covalent Bonding
	June 28	Chapter 9b – Covalent Bonding & Lab # 13 Ideal Gas Law
	June 29	Chapter 10a – Liquids and Solids & Practice Session (7-10)
	June 30	Exam #3 (Chapters 7 to 9) & Lab # 11 Heat of Acid-Base Neutralization
5	July 4	<i>Independence Day – No Class</i>
	July 5	Lab # 14 The VSEPR Theory... & Final Exam Review
	July 6	FINAL EXAM *** On Campus *** Comprehensive Chapters 1-10

HOLIDAYS and Important Dates:

June 6: Classes Begin
June 9: Official date of record
June 27: **LAST DAY FOR WITHDRAWALS at 4:30pm**
July 4: **HCC Closed for Independence Day**
July 6: **Final Exam**