



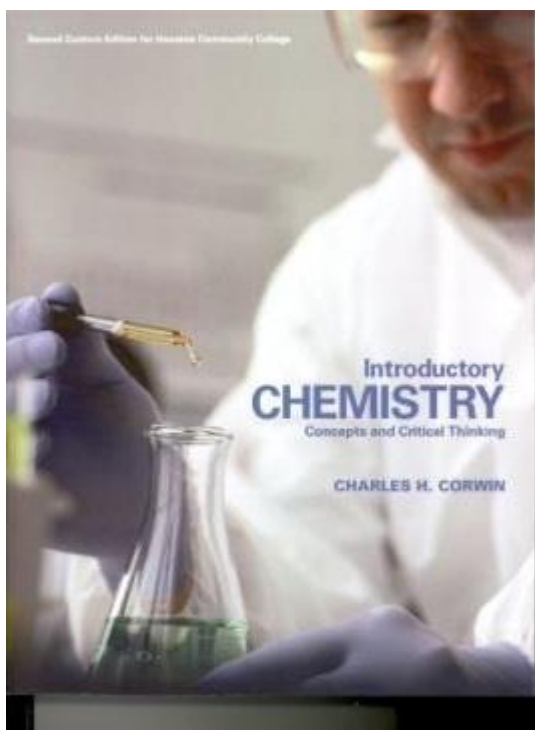
**Houston Community College**

*A Learning Community, A Caring Community*

**COURSE SYLLABUS AND EXAM SCHEDULE**  
**Introductory Chemistry 1 CHEM-1305**  
**Distance Education**

**Semester: Spring2017**

**Professor: Bindu Chakravarty**



**This is tentative syllabus.**

Instructor contact information

**Instructor:**  
**Bindu Chakravarty**

**Email: Bindu.Chakravarty@hccs.edu**

## **Course Catalog Description: Credit: 3 (3 lecture)**

General introduction to fundamental principles of chemistry includes atomic structure, chemical formulas, molecules, reactions, and elementary thermodynamics. This course is intended to be preparatory to CHEM 1411 for science majors who have no prior knowledge of chemistry. Core Curriculum Course.

Note: Only one of CHEM 1305, CHEM 1405, and/or CHEM 1411 can be used toward associated 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.

Prerequisites: Must be placed into GUST 0342 (or higher) in reading and ENGL 0310/0349 (or higher) in writing.

## **Course Intent:**

This is a lecture only course taught through in person/distance education Eagle online Canvas platform. All of this course supporting material (PowerPoints, video tutorials, exam reviews, supporting notes and handouts Etc.) are uploaded on eagle online canvas course platform. Distance education Students should be also prepared to spend as much time engaged in class activities as in a traditional face to face class, even though they will not be physically present in the classroom...per HCCS policy.

## **Mandatory for communication with professor:**

**Both Distance education class and traditional face to face class students should check HCC email regularly. All messages and communications will only come through your HCC email (not personal email) .So it is very visit course regularly and check opening and closing date of all the assignments (especially for distance education class). Each assignment opening and closing date and time is always different**

## **Eagle on Line Student User ID**

Your Eagle login user ID will be your HCC User ID (sometimes referred to as the "W" number). All HCC students have a unique User ID. If you do not know Your User ID you can look it up by visiting the HCC home page: From [www.hccs.edu](http://www.hccs.edu), under the column "STUDENT SUPPORT", click on the "Student System Help" link. Then click on "User ID and Password" and follow the instructions.

Or use the direct link to access the Student Sign in page:

<https://hccsaweb.hccs.edu:8080/psp/csprd/?cmd=login&languageCd=ENG>

The default student password is "distance." Students will then be prompted to

Change their password after their first login. Please visit the DE Technical Support website if you need additional assistance with your login.  
E-mail.

Communication with your online course instructor is important. Please keep him informed of problems you are having either with the course or with your Assignments. Disagreements or complaints must be addressed first with your Instructor. For other grievance procedures, consult the HCC Student Handbook.

### **DISTANCE EDUCATION STUDENT HANDBOOK**

The Distance Education Student Handbook contains policies and procedures Unique to the DE student. Students should have reviewed the handbook as part of the mandatory orientation. It is the student's responsibility to be familiar with the handbook's contents. The handbook contains valuable information, answers and resources, such as DE contacts, policies and procedures (how to drop, attendance requirements, etc) student services I(ADA, financial aid, degree planning, etc), course information, testing procedures, technical support, and academic calendars. Refer to the DE Student Handbook by visiting this link:

<http://de.hccs.edu/de/de-student-handbook>

### **EARLY ALERT**

HCC has instituted an Early Alert process by which your professor may “alert” you and DE counselors that you might fail a class because of excessive absences and/or poor academic performance. A counselor will then reach out to you to discuss your progress and offer any relevant resources. This initiative is designed to provide students with support services and resources to assist them in successfully completing their course

International Students: Receiving a W in a course may affect the status of your student Visa. Once a W is given in a course, it will not be changed to an “F” because of the visa consideration. International students are restricted to **ONLY ONE** online/distance education class per semester. Please contact the International Student Office at 713-718-8520 if you have any additional questions about your visa status and other transfer issues.

### **Getting ready for class:**

Required Text: **Introductory Chemistry: Concept and Critical Thinking by Charles H. Crowin (custom edition for HCCS available at book store)**

- **Publisher:** Pearson Higher Education

The HCC Custom Edition is available through the HCC bookstore.  
Edition: first and ISBN : 9781269313209 or

**Introductory Chemistry: Concepts and Critical Thinking (7th Edition)**

**Prentice Hall: 2013.**

**ISBN-13: 9780321804907 (Textbook Only)**

**Scientific Calculator**

**Free Departmental Tutors at Eastside campus learning hub and other campuses  
Please call campus to find details.**

**Tutors at: <http://hccs.askonline.net/index.mhtml>**

**The Distance Education Student Handbook contains policies and procedures unique to the DE student. Students should have reviewed the handbook as part of the mandatory orientation. It is the student's responsibility to be familiar with the handbook's contents. The handbook contains valuable information, answers, and resources, such as DE contacts, policies and procedures (how to drop, attendance requirements, etc.), student services (ADA, financial aid, degree planning, etc.), course information, testing procedures, technical support, and academic calendars. Refer to the DE Student Handbook by visiting this link: <http://de.hccs.edu/de/de-student-handbook>**

### **Academic Discipline Program Learning Outcomes:**

- 1. To appreciate that chemistry is an interesting and relevant subject. Describe the modern practices of chemistry.**
- 2. Understand the importance of instrumental measurements. Express measurements in metric and English units to gain a practical awareness of metric sizes.**
- 3. Classification of matter, elements in the periodic table and properties of a substance as chemical or physical.**
- 4. Describe models of atoms proposed by different scientists. Calculate atomic mass of an element. Explain the relationship between energy levels in an atom and lines in an emission spectrum.**
- 5. State the original periodic law and the modern periodic law. Predict the physical properties of an element and chemical formula of a compound given the information in the periodic table.**
- 6. Write balanced chemical equations and distinguish different types of chemical reactions.**
- 7. To relate the moles of a substance to the number of particles. Calculate the molar mass, molar volume, chemical formula and percent composition of a compound.**
- 8. To interpret the coefficients in a balanced equation as a mole ratio. Perform mass-mass, volume-volume and mass-volume**

**Stoichiometry calculations.**

**9. Learn properties of gases, variables affecting gas pressure and calculate pressure, volume or temperature of a gas after a change in conditions.**

**10. Explain how valence electrons create a chemical bond. Formation of different types of chemical bonds. Draw electron dot and structural formula of a molecule. Determine shape of a molecule considering the repulsive force of valence electrons.**

### **Course Student Learning Outcomes (SLO) :**

**1. To appreciate that chemistry is an interesting and relevant subject. Describe the modern practices of chemistry.**

**2. Understand the importance of instrumental measurements. Express measurements in metric and English units to gain a practical awareness of metric sizes.**

**3. Classification of matter, elements in the periodic table and properties of a substance as chemical or physical.**

**4. Describe models of atoms proposed by different scientists. Calculate atomic mass of an element. Explain the relationship between energy levels in an atom and lines in an emission spectrum.**

**5. State the original periodic law and the modern periodic law. Predict the physical properties of an element and chemical formula of a compound given the information in the periodic table.**

**6. Write balanced chemical equations and distinguish different types of chemical reactions.**

**7. To interpret the coefficients in a balanced equation as a mole ratio. Perform mass-mass, volume-volume and mass-volume stoichiometry calculations.**

**8. Learn properties of gases, variables affecting gas pressure and calculate pressure, volume or temperature of a gas after a change in conditions.**

**9. Explain how valence electrons create a chemical bond. Formation of different types of chemical bonds. Draw electron dot and structural formula of a molecule. Determine shape of a molecule considering the repulsive force of valence electrons.**

### **Learning Objectives (Numbering system linked to SLO)**

**1.1 To describe the early practice of chemistry.**

**1.2 To describe the modern practice of chemistry**

**1.3 To appreciate that chemistry is an interesting and relevant subject.**

**2.1 To identify typical instruments in a chemistry laboratory and explain why an instrumental measurement is never exact.**

**2.2 To identify the number of significant digits in a given measurement.**

**2.3 To round off a given value to a stated number of significant digits.**

**2.4 To explain the concept of exponents and specifically powers of 10.**

**2.5 To describe the three steps in the unit analysis method and apply this method of problem solving.**

**2.6 To explain the concept of percent and apply percent as a unit factor.**

**3.1 To list the basic units and symbols of the metric system.**

**3.2 To express a given metric measurement with a different metric prefix**

**3.3 To describe the technique of determining the volume by displacement.**

**3.4 To explain the concept of density and perform calculations that relate density to mass and volume**

**3.5 To state the values for the freezing point and boiling point of water on the Fahrenheit, Celsius and Kelvin scales**

**4.1 To describe the motion of particles in the solid, liquid, and gaseous states of matter**

**4.2 To classify a sample of matter as an element, compound, or mixture.**

**4.3 To distinguish between the properties of metals and nonmetals**

**4.4 To explain the law of definite composition of a compound.**

**4.5 To classify a property of a substance as physical or chemical.**

**4.6 To apply the conservation of mass law to chemical changes.**

**4.7 To distinguish between potential and kinetic energy.**

**4.8 To apply the Conservation Of Energy Law to physical and chemical changes.**

**5.1 To describe the Dalton, Rutherford, and Thompson's models of the atom.**

**5.2 To explain the concept of relative atomic mass.**

**5.3 To explain the way nature of light and state the relationship of wavelength, frequency, and energy of light.**

**5.4 To explain the quantum concept applied to matter and energy.**

**5.5 To describe the Bohr model of the atom and explain the relationship between energy levels in an atom and lines in an emission Spectrum.**

**5.6 To write the predicted electron configurations for selected elements.**

**5.7 To describe the quantum mechanical model of the atom and compare the relative sizes and shapes of “s” and “p” orbitals.**

**6.1 To state the original Periodic Law proposed by Mendeleev and modern Periodic Law proposed by Mosley.**

**6.2 To classify the elements according to their groups and periods in the periodic table.**

**6.3 To describe the trend in atomic size and metallic character within a group or period of elements.**

**6.4 To predict a physical property for an element given the value of other elements in the same group**

**6.5 To predict the number of valence electrons for any representative element**

**6.6 To draw the electron dot formula for any representative element.**

**7.1 To classify a compound as a binary ionic, ternary ionic, or a binary molecular compound.**

**7.2 Write chemical formulas for compounds composed of monoatomic ions and polyatomic ions**

**7.3 To write names and formulas in binary and ternary oxyacid.**

**8.1 To state observation that are evidence for a chemical reaction.**

**8.2 To write balanced chemical equations.**

**8.3 To distinguish five types of chemical reactions**

**8.4 To write a balanced chemical equation for the reaction of an acid and a base.**

**9.1 To state the value of Avogadro’s number**

**9.2 To relate the moles of the substance to the number of particles**

**9.3 To relate the mass of the substance to the number of particles.**

**9.3 To state the value for the molar volume of any gas at STP.**

**9.4 To calculate the percent composition of a compound given its chemical formula**

10.1 To relate the coefficients in a balanced chemical equation to:

A) moles of reactants and products and B) liters of gaseous reactants and products

10.2 To relate the number of moles of two substances in a balanced chemical equation

11.1 To list properties of a gas

11.2 To state standard atmospheric pressure in different units

11.3 To identify variables that affect the pressure of a gas

11.4 To state whether gas pressure increases or decreases for a given change in volume, temperature, or the number of moles of gas

11.5 To explain the concept of vapor pressure

12.1 To explain how valence electrons create a chemical bond and formation of different types of chemical bonds

12.2 To draw the electron dot formula for a molecule

12.3 To determine the shape of a molecule by applying VSEPR Theory

### **Important Course Content policy and Exam Schedule information:**

1 **Chapters covered:** 11 chapters

2 **Exams:** **Program policy:** Mandatory comprehensive Final Exam

3. **Assignments:** Four discussion/assignments Regular visits to course site are mandatory and are part of the final grade.

### **Helpful Advice and Expectations:**

Chemistry is a very interesting field, ranging from the study of simple inorganic Compounds to enormously complex molecules such as enzymes and nucleic acids in living organisms. In this course, the major topics we will be covering are Nomenclature of chemical formulas, reactions, and stoichiometry calculations, chemical thermodynamics, electron configuration and chemical bonding, gas laws, and solutions. As you might suspect, it can be easy to fall behind and, as a result, to not be ready for the exams. Following are some general tips that may be helpful:



**Time Management:** Procrastination is the enemy! The great temptation for the student is to delay the work as long as possible. I cannot stress enough that this is a recipe for failure.



Staying current with your work is essential to get success in this course.



If you don't understand anything then please ask questions.



**Course Load:** if you are a working student, think carefully before enrolling in too many classes. Your job performance and your scholastic performance will both suffer if you are overburdened, so be honest with yourself about how much you can accomplish. Do not forget to leave time in your schedule for study outside the class hours and class preparation. Consult your ----- HCCS Student Handbook for additional details.

When beginning a new chapter, I recommend that you read through it quickly the first time, just to give yourself a good feel for what it is about. If you are really on the job you will have done this before the class lecture on the chapter! You will understand what's going on in class much better if you do this.



**Study Skills:** Good study skills are essential for college study. Reading all assigned material is key to your success. Do not deceive yourself into believing that you can do well in this course if you do not read the assigned material. Please ask me any questions you might have as you work through the subject. Consider me a resource! Also, see [www.dushkin.com/online/](http://www.dushkin.com/online/) for additional study skills.

Remember that college level work requires a commitment of time and effort. The more you put into it the better the results should be. Always treat this as you would a job!



Get a good, scientific calculator that has scientific notation ("EE" or "EXP" key), log, ln,  $x^2$ ,  $\sqrt{\quad}$ , etc.



Review simple basic math Concepts.



Study groups can be very helpful. Keep the group small though, no more than three or four people.



Finally, keep a positive attitude! Chemistry can be hard, but with the right attitude and approach, you will succeed in mastering it!

I hope you find chemistry to be an interesting and rewarding subject which will not only be useful in your academic major, but will give you a better insight into the many scientific challenges we are facing today. I look forward to working with you this semester!

**TEXTBOOK:** We will cover 11 chapters in the semester.

**TEXT:** Following chapters are covered.

**Chapter 1 and Prerequisite Science Skills: Introduction to Chemistry**

**Chapter 2: The Metric System (Sections 2.1-2.4, 2.5-2.10)**

**Chapter 3: Matter and Energy (3.1-3.10)**

**Chapter 4: Models of the Atom (Sections 4.1-4.10)**

**Chapter 5: The Periodic Table (Sections 5.1-5.3, 5.4- 5.10)**

**Chapter 6: Language of Chemistry**

**Chapter 7: Chemical Reactions (Sections 7.1-7.6, 7.7-7.11)**

**Chapter 8: The Mole Concept (Sections 8.1-8.4, 8.5-8.9)**

**Chapter 9: Chemical Equation Calculations (Sections 9.1-9.9)**

**Chapter 10: Gases (Sections 10.1-10.7, 10.8-10.11)**

**Chapter 12: Chemical Bonding (Sections 12.1, 12.6-12.7)**

## **Tentative Exam Schedule:**

Exam #	Chapter covered	Exam opens	Exam closes	
Exam 1	1,2	Jan 28	Jan 29	
Exam 2	3,4,5	Feb 25	Feb 26	
Exam 3	6,7,8	March 25	March 26	
Exam 4	9, 10,12	April 22	April 23	
Final	comprehensive	May 8th , 8 AM	May 8th,11:59PM	

**An Important Note: This is tentative schedule and changes can be made. In case any changes are made, students will be notified via email. IT IS RESPONSIBILITY OF STUDENT TO CHECK THEIR EMAILS AND CAREFULLY LOOK AT QUIZ DATE AND TIMING AND NOT GO BY SYLLABUS ALONE. A MISSED EXAM WILL RESULT IN ZERO AND CAN NOT BE REOPENED. DO NOT ASSUME ANY THING.**

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## **Grade Determination:**

Exam	% in final average
Exam 1	18
Exam 2	18

Exam 3	18
Exam 4	18
Assignments/ discussion	Recommended
Final Comprehensive	28
Total	100

**Program policy:** Mandatory comprehensive Final Exam

## **Title IX Policy:**

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights is on the HCC website under Students-Anti discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance.

It is important that every student understands and conforms to respectful behavior while at HCC.

Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations.

Log in to: [www.edurisksolutions.org](http://www.edurisksolutions.org). Sign in using your HCC student email account, then go to the button at the top right that says Login and enter your student number.

## **Class Evaluation:**

Please check following link for class evaluation:

<http://www.hccs.edu/district/students/egls3/>

## Grade Determination:

1. TASP requirements should be satisfied prior to this course or the student will automatically be dropped.
2. Instructional practices will help students enhance six basic intellectual competencies: Reading, writing, speaking, listening, critical thinking, and computer skills.
3. A student must take **four** lecture tests and the **Final Examination**. One of the lowest exam grade will be replaced by final exam score. **YOU MUST TAKE ALL FOUR EXAMS IN ORDER TO GET THIS PRIVILEGE. A MISSED EXAM WILL RESULT IN ZERO AND WILL NOT BE REPLACED OR DROPPED.**
4. The Final Examination will be cumulative and there will be no make- up test for the Final Exam. **Everyone is required to take the Final Exam.**
5. All policies as described in the current HCCS Student Handbook will be strictly enforced. These include, but are not limited to policies regarding attendance, student behavior, and scholastic dishonesty. Instructor can withdraw students with excessive absence.
6. My grading scale:  
90-100- A  
80-89 - B  
70-79 - C  
60-69 - D  
Below 60 - F

**Instructor Evaluations** EGLS3 --Evaluation for Greater Learning Student Survey System 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. The following link may be used to access the survey [www.hccs.edu/egls3](http://www.hccs.edu/egls3).

## **Students with disabilities:**

“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. 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.

### **Withdrawal policy:**

The student is responsible for withdrawing from the class.

Beginning Fall 2007, the State of Texas imposes penalties on students who drop courses excessively. Students are limited to no more than SIX total course withdrawals throughout their educational career at a Texas public college or university.

To help you avoid having to drop/withdraw from any class, contact your counselor or professor regarding your academic performance and keep up with your grades. Drop deadlines for in-person on-campus dropping and online dropping may vary. It is the student's responsibility to consult HCC's Academic Calendar and drop the course by the appropriate deadline.

The instructor expects students to log onto Eagle Online at least once a week (twice recommended) and may access login timestamps to verify attendance as required for grading and reporting to the College.

### **Academic Integrity:**

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

ALL students involved. THIS POLICY WILL BE STRICTLY ENFORCED.