

# Brazosport College

## Syllabus for CHEM 1311 - General Chemistry I

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### I. COURSE DESCRIPTION

#### **CHEM 1311 - General Chemistry I. CIP 4005015203**

A review and extension of basic principles of chemistry, together with a study of the elements and their compounds, bonding theories, kinetic molecular theory, solutions, and acid-base theories.

**Credit Hours:** 3 (3 lecture, 0 lab)

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Dr. Judy Chu

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Dr. Kirby Lowery

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Gary Hicks

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Jeff Detrick

August 2021

- A. Prerequisite:** Grade of “C” or better in high school chemistry or grade of “C” or better in CHEM 1305 or approval of the division chair.

**Required skill level:** College-level reading, writing and math.

## **II. COURSE OBJECTIVES**

1. Learn basic terminology and the application of the mathematical skills required to interrelate numbers of atoms and molecules to mass and units of concentration.
2. Become familiar with the structure of the atom and its corresponding placement on the periodic table, as evidenced by the ability to predict various properties such as size, ionization potential, electronegativity, and electron affinity from the position of the element on the periodic table.
3. Write the electronic configuration of an atom and explain an element’s reactivity in terms of its electronic configuration.
4. Be able to explain in writing both how and why various elements combine to form compounds. This should involve the interrelation of the fundamental concepts of bond theories covered in class into broader abstractions or principles.
5. Identify and recognize the limitations and differences among competing scientific models of chemical systems, such as covalent bonding and hybridization versus molecular orbital theory, and the various acid-base theories.
6. Gain a basic understanding of the behavior of elements and compounds in solutions and in chemical reactions.
7. Be able to predict the behavior and properties of molecules and ions in the gaseous, liquid, and solid states given a set of physical conditions.
8. Demonstrate knowledge of the physical and chemical properties of solutions of electrolytes and non-electrolytes.
9. Gain a background in chemical principles sufficient for success in more advanced courses such as Chemistry 1312 or Chemistry 2323.

## **III. STUDENT LEARNING OUTCOMES**

1. Define the fundamental properties of matter, as well as classify matter, compounds, and chemical reactions.
2. Determine the basic nuclear and electronic structure of atoms.
3. Identify trends in chemical and physical properties of the elements using the Periodic Table
4. Describe the bonding and the shape of simple molecules and ions.
5. Solve stoichiometric problems.
6. Write chemical formulas; write and balance equations; use the rules of nomenclature to name chemical compounds; define the types and characteristics of chemical reactions.
7. Use the gas laws and basics of Kinetic Molecular Theory to solve gas problems.
8. Determine the role of energy in physical changes and chemical reactions.
9. Convert units of measure and demonstrate dimensional analysis skills.

#### IV. TEXTBOOK OR COURSE MATERIAL INFORMATION

##### A. Textbook

1. Chemistry (Textbook only) Chang/Overby, 13<sup>th</sup> Ed., Chang, Publisher McGraw Hill, 2019. ISBN: 978-126-0162035 (Dr. Lowery sections, required)
2. Chemistry W/Connect, 13<sup>th</sup> Ed., Chang, Publisher McGraw-Hill, 2019. ISBN: 978-1-26-0264852. (Dr. Chu sections, required)
3. Student Study Guide, Chang/Goldsby, 12<sup>th</sup> Ed., Publisher McGraw-Hill, 2016. ISBN: 978-1259286230 (recommend)
4. Scientific Calculator T130XA (required)

Required course materials are available at the Brazosport College bookstore, on campus or online at <http://brazosport.edu/bookstore/home.html>. Students are not under any obligation to purchase a textbook from the college bookstore. The same textbook is/may also be available from an independent retailer, including an online retailer.

**For Distance Education Courses include the following:** Contact the Brazosport College Bookstore with a credit card for course materials. Phone: 979.230.3651. Fax: 979-230-3653. Email: [bookstore@brazosport.edu](mailto:bookstore@brazosport.edu). Website: <http://brazosport.edu/bookstore/home.html>

##### Connecting To Supplemental Class Material:

Access the course by going to: <https://online.brazosport.edu/d2l/login>

**Brazosport College students:** Follow the instructions in "[How to Access Desire2Learn -Local](#)" to login to the course in Desire2Learn. For help with login to Desire2Learn, email your problems to [helpdesk@brazosport.edu](mailto:helpdesk@brazosport.edu).

##### B. Course Outline

**This is a sample outline which may vary with individual instructors. It will also vary based on whether the course is a summer course or a fall/spring course. Students should contact their instructor for the outline of the course they are taking.**

Week	Topic	Chap. - Unit
1	Orientation, Classification of Matter, Physical and Chemical Properties	1.1 - 1.6
2	Measurement, Scientific Notation, Significant Figs, Conversions	1.7 - 1.9
2	Atomic Theory, Periodic Table,	2.1 - 2.4
3	Formulas, Nomenclature	2.5 - 2.7
3	Acids, hydrates, and review	2.7
4	<b>Exam 1</b>	
4	Molar Mass, % Composition, Empirical Formula	3.1 - 3.6
5	Chemical Equations, Reaction Stoichiometry	3.7 - 3.8
5	Limiting Reactant, Yields,	3.9 - 3.10
6	Aqueous Soln's, Electrolytes, types of reactions, Oxidation No.	4.1 - 4.4
6	Redox Rxn's	4.4

7	<b>Exam 2</b>	
<b>Week</b>	<b>Topic</b>	<b>Chap. - Unit</b>
7	Types of Solutions, Concentration Units, Acid-Base Titrations	12.1 - 12.3 - 4.7
8	Effects on Solubility of T and P, Colligative Properties	12.4 - 12.5 12.6 - 12.8
8	Gas Laws	5.1 - 5.3
10	Ideal Gas Equation, Stoichiometry	5.4 - 5.5
10	Mixtures, Kinetic-Molecular Theory	5.6 - 5.8
	Types of Energy, Energy Changes in Chemical Reactions	6.1 - 6.3
11	$\Delta H$ Rxn, Formation, & Combustion,	6.4 - 6.7
11	<b>Exam 3</b>	
11	Bohr Atom, Quantum Atom	7.1 - 7.5
12	Electronic Configurations, Aufbau Principle	7.6 -7.9
12	Periodic Properties	8.1 - 8.6
13	Ionic Bonding, Covalent Bonding	9.1 - 9.5
13		
14	Lewis Structures, Bond Energies	9.6 - 9.10
14	VSEPR	10.1 - 10.2
15	Valence Bond Theory, Exam 4	10.3 - 10.5
16	<b>Final Exam</b>	

### **Important Semester Dates:**

Last Day to Withdraw from Classes– Check BC Calendar: <http://catalog.brazosport.edu/index.php>

## **V. STUDENTS WITH DISABILITIES**

Brazosport College is committed to providing equal education opportunities to every student. BC offers services for individuals with special needs and capabilities including counseling, tutoring, equipment, and software to assist students with special needs. For student to receive any accommodation, documentation must be completed in the Office of Disability Services. Please contact Phil Robertson, Special Populations Counselor at 979-230-3236 for further information.

## **VI. TITLE IX STATEMENT**

Brazosport College faculty and staff are committed to supporting students and upholding the College District's non-discrimination policy. Under Title IX and Brazosport College's policy FFDA (Local), discrimination based on sex, gender, sexual orientation, gender identity, and gender expression is prohibited. If you experience an incident of discrimination, we encourage you to report it. While you may talk to a faculty or staff member at BC, please understand that they are "Responsible Employees" and must report what you tell them to college officials. You can also contact the Title IX Coordinators directly by using the contact information below. Additional information is found on the Sexual Misconduct webpage at [www.brazosport.edu/sexualmisconduct](http://www.brazosport.edu/sexualmisconduct)

## VII. ACADEMIC HONESTY

Brazosport College assumes that students eligible to perform on the college level are familiar with the ordinary rules governing proper conduct including academic honesty. The principle of academic honesty is that all work presented by you is yours alone. Academic dishonesty including, but not limited to, cheating, plagiarism, and collusion shall be treated appropriately. Please refer to the Brazosport College Student Guide for more information.

Academic dishonesty violates both the policies of this course and the Student Code of Conduct. In this class, any occurrence of academic dishonesty will be referred to the Dean of Student Services for prompt adjudication, and may, at a minimum, result in F, in this course. Sanctions may be imposed beyond your grade in this course by the Dean of Student Services.

It is your responsibility to know and understand the student code of conduct with regard to scholastic honesty, as well as the consequences for a breach of conduct. If you cheat on an exam, you will receive an "F" for the class. Please refer to the Brazosport College Student Guide for more information. This is available online at <http://brazosport.edu/students/for-students/student-services/>

## VIII. ATTENDANCE AND WITHDRAWAL POLICIES

Class attendance contributes to your final grade, but you must attend class to successfully complete the course. If you are unable to complete this course, you must complete and submit a withdrawal form with the registrar's office. If the student decides to drop out of the class, it is the responsibility of the student to initiate a withdrawal before the withdrawal deadline in order to get a "W" on their transcript. If this is not done the student will receive a grade based on test grades and class grades earned during their attendance and absence (i.e., zeros on all missed materials, exams, skills tests, and final exam). If you stop participating on-line and do not withdraw, you will receive a performance grade, usually an "F".

## IX. COURSE REQUIREMENTS AND GRADING POLICY

For this class you must complete the following:

**Exams:** There will be a total of four exams. Each exam will last approximately one hour during class. The exact date of each exam will be announced in class prior to the actual date of the exam.

**Homework:** You will be given end-of-chapter homework assignments which are found in your textbook. Due date for homework is the day of the exam. For example, Exam 1 covers chapters 1 and 2; therefore, the due date for chapters 1 and 2 homework is the day of Exam 1.

**Participation:** Attendance, working problems in class, and **no cell phone use in class.**

**Final Exam:** The final will be given at the end of the course. The final exam is comprehensive.

### A. Grading

Each of the above requirements counts toward your final grade as follows:

Exams	60 - 80%
Homework/Quiz	0 - 20%
Participation	5%
Final Exam	20%

Grades are assigned as follows:

Grade	Final Average
A	90-100
B	80-89
C	70-79
D	60-69
F	Below 60

## B. Testing

Permitted items during the exam: one page of hand written notes and a calculator (scientific or graphing). **Smart phones are not permitted during exams!!**

The material to be covered on each exam is as follows:

<u>Exam</u>	<u>Chapters</u>
1	1 and 2
2	3 and 4 and 12
3	5 and 6
4	7, 8, 9, and 10
Final	Comprehensive Exam

## C. Make-Up Policy

There will be no make-up exams. However, if the student anticipates a legitimate absence (as judged by the instructor) for an exam, arrangements can be made to take the exam in the Learning Resource Center, LRC. This must be done before the next scheduled class after the exam. The final exam grade will replace **one** missed exam grade.

## X. STUDENT CONDUCT STATEMENT

Students are expected to be aware of and follow the Brazosport College Student Code of Conduct. Students have violated the Code if they “fail to comply with any lawful directions, verbal or written, of any official at BC.” Lawful directions include precautions and requirements taken to prevent the spread of COVID-19 at Brazosport College. Students who do not follow safety requirements, including the wearing of a mask, may be removed from class by their instructor and referred to the Dean of Student Services.

## XI. COVID-19 STATEMENT

At Brazosport College, all of us, including faculty, staff and students, share a common goal this fall semester, to keep our classes running in the safest manner possible and avoid any disruption to your progress in achieving your educational and career goals. To that end, we ask and encourage you to conduct yourself in the following manner while on campus this semester:

- Every day, perform a self-health check prior to coming to campus and stay home if sick.
- To the greatest extent possible, maintain your distance between you and other students, faculty, and staff while on campus.

- Wear a properly fitted face covering over your mouth and nose while indoors on campus. If you do not have a mask, they will be available to you in all classrooms this fall.
- Practice good hygiene, washing your hands regularly and/or using hand sanitizer.
- The most effective way to protect yourself from Covid-19 is through vaccination. The vaccine is readily available and at no cost to you. Vaccine information and availability can be found at <https://brazosport.edu/coronavirus/vaccine/>.

If at any time this semester you begin to experience Covid symptoms, or if you are exposed to someone who has tested positive for Covid-19, please take the following steps:

- Stay home if you're feeling sick and minimize your contact with others.
- Alert the College by completing the Covid-19 Exposure Report Form online at <https://brazosport.edu/coronavirus/report/>. Be sure to provide accurate contact information, including a working phone number that you will answer.
- After submitting the report, you will be promptly contacted by a member of our Rapid Response Team, who will ask you some specific questions about your situation and provide you with guidance moving forward.
- If it is determined that you should not come to class, your instructor will be notified. **Please know that your instructor will consider course adjustments and potential make-up work only if your case has been reported to Brazosport College, and they've been notified by our response team.** Your instructor will work with you to determine how to manage any make-up work.

The Community Health Network (CHN) Clinic at Brazosport College (located in BC Central B-Wing) is scheduled to be open from 8 AM to 6 PM Tuesday through Thursday during the Fall 2021 semester. While walk-ins are available, your visit will be easier if you pre-register by creating an account at [www.mychn.org](http://www.mychn.org). In addition to providing health and behavioral services, CHN also provides COVID vaccinations and testing. All insurance is accepted, and healthcare is provided on a sliding scale including no cost for those who need it.

Throughout the semester, please regularly check the College's Covid-19 information page at <https://brazosport.edu/coronavirus/>, where the latest updates and guidelines will be posted. As members of the BC community, all of us share a responsibility to each other to be as safe as possible.

## **XII. CAMPUS CLOSURE STATEMENT**

Brazosport College is committed to the health and safety of all students, staff, and faculty and adheres to all federal and state guidelines. The College intends to stay open for the duration of the semester and provide access to classes and support services on campus in the safest way possible. The College will also comply with lawful orders given by applicable authorities, including the Governor of Texas, up to and including campus closure. It is possible that on campus activities may be moved online and/or postpone if such orders are given.

### XIII. STUDENT RESPONSIBILITIES

Students are expected to fully participate in this course. The following criteria are intended to assist you in being successful in this course:

1. Understand the syllabus requirements
2. Use appropriate time management skills
3. Communicate with the instructor
4. Complete course work on time, and
5. Utilize online components (such as Desire2Learn) as required.

### XIV. OTHER STUDENT SERVICES INFORMATION

Information about the Library is available at <http://brazosport.edu/students/for-students/places-services/library/about-the-library/> or by calling 979-230-3310.

For assistance with online courses, an open computer lab, online and make-up testing, audio/visual services, and study skills, visit Learning Services next to the Library, call 979-230-3253, or visit <http://brazosport.edu/students/for-students/places-services/learning-services/>

For drop-in math tutoring, the writing center, supplemental instruction and other tutoring including e-tutoring, visit the Student Success Center, call 979-230-3527, or visit <http://brazosport.edu/students/for-students/student-success-center/>

To contact the Physical Sciences and Process Technology Department call 979-230-3618.

The Student Services provides assistance in the following:

Counseling and Advising	979-230-3040
Financial Aid	979-230-3294
Student Activities	979-230-3355

To reach the Information Technology Department for computer, email, or other technical assistance call the Helpdesk at 979-230-3266.



Get the information you need – when you need it. Click <http://geni.us/BRAZO> to install **BC Connect** on your mobile device to receive reminders, explore careers, map your educational plan, be in the know about events, find out about scholarships, achieve your goals and much more.



## Using Desire2Learn for Introductory Chemistry (CHEM 1311)

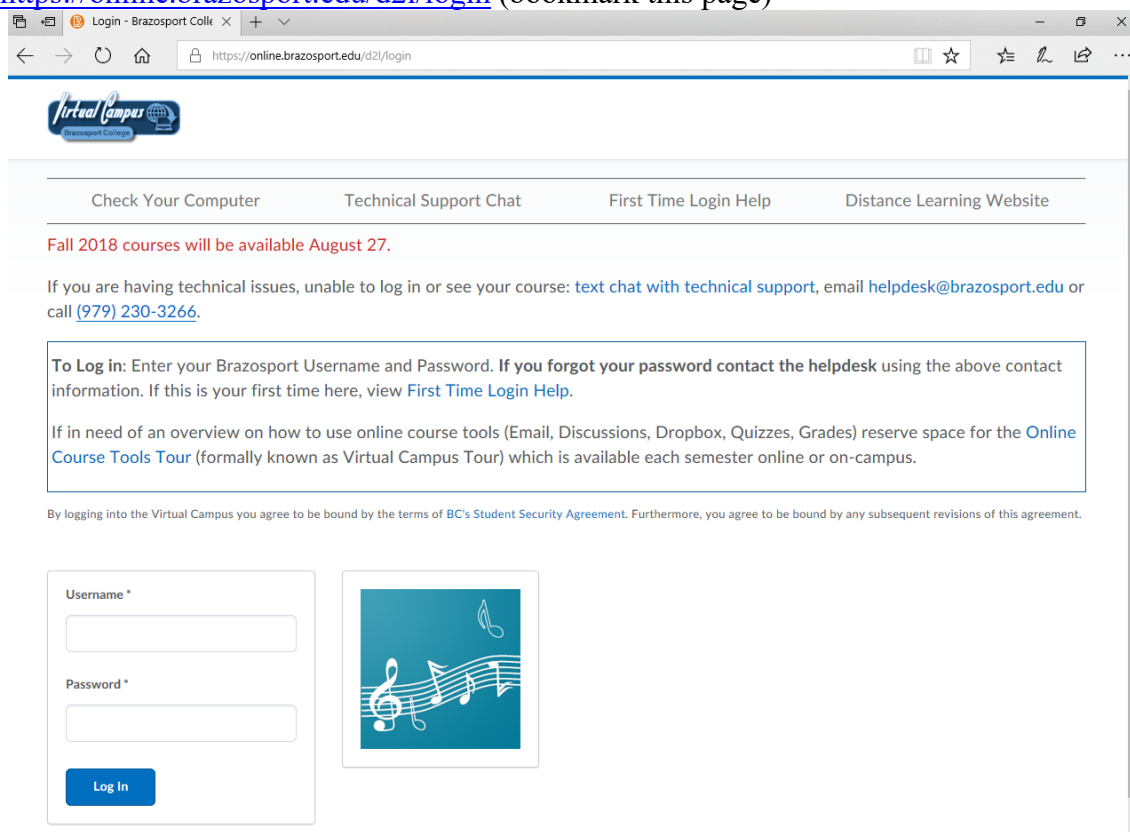
Updated August 21, 2019

### What you need:

1. Computer with internet connection as well as Browsers which meets [these requirements](#).
2. Go to the online page at Brazosport College for important information for online students: <http://brazosport.edu/students/for-students/bc-online/>
3. **Student ID (not Social Security Number)** and **PIN**. Go to <http://brazosport.edu/faculty-and-staff/employee-services/information-technology/student-accounts/>
4. Sign up for BCNET password reset at <https://password.brazosport.edu/>

### Log-on to Web Course

1. *Open the internet browser* on your computer
2. Go to the **Brazosport College online course home page** <https://online.brazosport.edu/d2l/login> (bookmark this page)



3. *Type your **User Name** and **password** in the boxes* (see example below):  
Your User Name is the first initial of your first name, full last name, and the last four digits of your student ID. (ex: jsmith2468). Your password is bc + your pin number. You should have received a letter from the Registrar that provided you your Student ID number and your pin number when you first registered at BC. You may visit the Registrar Office to get this information in person.
4. You will now see the **My Courses** page that will display your name and show a link for the course. If you are taking more than one web course at Brazosport College you will see each course listed, *click* on the course to enter.