

# Brazosport College

## Syllabus for CHEM 1312 - General Chemistry II (With Honor's Option)

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### I. COURSE DESCRIPTION

**CHEM 1312 - General Chemistry II. CIP 4005015203**

A study of kinetics and equilibria, thermodynamics, electrochemistry, and organic chemistry.

**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 2020

- A. Prerequisite:** Grade of “C” or better in **CHEM 1311**.  
**Required skill level:** College-level reading, writing and math.

## **II. COURSE OBJECTIVES**

1. Determine the rate of a chemical reaction, to write the rate law for any reaction given the rate and reagent concentrations, and to write the integrated rate law for first order reactions.
2. Describe a chemical system at equilibrium and to calculate the effect of a given change in reaction conditions on the equilibrium concentrations.
3. Determine whether or not a reaction will occur, and to calculate the heat flow in a reaction system, the maximum amount of useful work that can be done by a spontaneous reaction, and the equilibrium state at a given temperature.
4. Determine the overall reaction in an electrochemical cell and the cell potential at the given reactant concentrations.
5. Identify the family of an organic compound given its structure and to be able to name the compound and write a reaction typical of the compound.
6. Gain a background sufficient to provide for success in more advanced courses in chemistry.

## **III. STUDENT LEARNING OUTCOMES**

1. Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships.
2. Identify and balance oxidation-reduction equations and solve redox titration problems. Discuss the construction and operation of galvanic and electrolytic electrochemical cells and determine standard and non-standard cell potentials.
3. Determine the rate of a reaction and its dependence on concentration, time, and temperature.
4. Apply the principles of equilibrium to aqueous systems using LeChatelier's Principle to predict the effects of concentration, pressure, and temperature changes on equilibrium mixtures.
5. Analyze and perform calculations with the thermodynamic functions, enthalpy, entropy, and free energy.
6. Describe basic principles of organic chemistry and descriptive inorganic chemistry.

## **IV. TEXTBOOK OR COURSE MATERIAL INFORMATION**

### **A. Textbook**

1. Connect Chemistry W/Access Card, Chang/Goldsby, 13<sup>th</sup> Ed., Chang, Publisher McGraw-Hill, 2019. ISBN: 978-1-26-0264852 (required)
2. 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/index.asp>

**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	Date	Topic	Chap. - Unit	Homework
1	Jan. 11	Chemical Equilibrium, Constant and Expression	14.1-14.2	<a href="https://connect.mheducation.com/class/j-chu-section-41---mw-11am-1215pm">https://connect.mheducation.com/class/j-chu-section-41---mw-11am-1215pm</a>
1	Jan. 13	Calculations using Equilibrium Constant	14.3-14.4	
2	<b>Jan. 18</b>	<b>MLK Holiday</b>		
2	Jan. 20	Factors affecting Equilibrium Const	14.5	
3	Jan. 25	Factors affecting Equilibrium Const, Reaction Rate	14.5, 13.1	
3	Jan 27	Rate Law, Rate constant and Time Relationship	13.2-13.3	
4	Feb. 1	Temp. Dependence of k, Rxn Mechanism, Catalysis	13.4-13.6	
4	Feb. 3	<b>Review for Exam 1</b>		
5	Feb. 8	<b>Exam 1</b>		
5	Feb. 10	Bronsted Acids and Bases, pH, Strength of Acids and Bases	15.1-15.4	
6	Feb. 15	Acid-Base Equil. Const Calculations	15.5-15.7	
6	Feb. 17	Polyprotic Acids, Salts, Hydrolysis Soln Equilibria, Common Ion Effect, Buffers	15.8-15.12 16.1-16.3	
7	Feb. 22	Buffers, Titration Calculations, Indicators, Solubility Equilibria	16.4-16.6	
7	Feb. 24	Fractional Precipitation, Common Ion Effect, pH and Solubility, Complex Ion Equilibria, Qualitative Analysis	16.7-16.9, 16.10- 16.11	
8	Mar. 1	<b>Review for Exam 2</b>		
8	Mar. 3	<b>Exam 2</b>		
9	Mar. 8-12	<b>Spring Break</b>		
10	Mar. 15	Thermodynamics, Spontaneity, Entropy, 2 <sup>nd</sup> Law of Thermodynamics	17.1-17.4	
10	Mar. 17	Gibbs Free Energy and Chemical Equilibrium	17.5-17.7	
11	Mar. 22	Redox Reactions and Galvanic Cells	18.1-18.2	
11	Mar. 24	Standard Reduction Potential, Thermodynamics of Redox Rxns, Nernst Equation	18.3-18.5	
		<b>March 26 – Last Day to Withdraw</b>		
12	Mar. 29	Concentration Cell, EMF, Batteries	18.5-18.8	
12	Mar. 31	Electrochemistry worksheet, Exam 3 Review		
13	Apr. 5	<b>Exam 3</b>		
13	Apr. 7	Class of Organic Cmpds, Nomenclature	24.1-24.2	
14	Apr. 12	Nomenclature, Reactions, Optical Isomerization,	24.3-24.4	

		Aromatic Hydrocarbons		
14	Apr. 14	Functional Groups, Polymers	24.3-24.4, 25.1-25.2	
15	Apr. 19	Nuclear Chemistry	19.1-19.3	
15	Apr. 21	Nuclear Chemistry	19.4-19.5	
16	Apr. 26	<b>Exam 4</b>		
16	Apr. 28	Review for Final Exam		
16	May 3	<b>Final Exam – Monday 8 AM – 10 AM</b>		

### **Important Semester Dates:**

Last Day to Withdraw from Classes– Check BC Academic 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. This is available online at <http://brazosport.edu/students/for-students/student-services/>

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. Sanctions may be imposed beyond your grade in this course by the Dean of 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).

## 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 and fifteen minutes during class with the exception of the final, which will last two hours. The exact date of each exam will be announced in class prior to the actual date of the exam.

**Homework:** You will be using “Connect” for homework. The link to the homework website is <https://connect.mheducation.com/class/j-chu-section-41---mw-11am-1215pm>. You will need an access code to register for “Connect”. The access code is bundled with your textbook. If you bought the textbook last semester for CHEM 1311, your account is still active. Alternatively, you can purchase the access code at <http://connect.customer.mheducation.com/students-how-to-order/>.

Due date for homework is posted in [CONNECT](#).

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

**Participation:** Attendance, working problems in class.

**SI Session:** Participation in Supplemental Instruction session to be held by the SI leader.

### A. Grading:

Hourly Exams	60%
Homework	15%
Participation	5%
Final Exam	20%
SI Session Attendance	Up to 10 extra points toward final grade

Grading scale will be defined according to the following system.

90-100	=A
80-89	=B
70-79	=C
60-69	=D
0-59	=F

### B. Testing

See the class calendar for the chapters and dates of the tests. Students are allowed to Bring one page of handwritten notes, containing equations, etc., to the exams. The material to be covered on each exam is as follows:

<u>Exam</u>	<u>Chapters</u>
1	14 and 13
2	15 and 16
3	17 and 18
4	19 and 24
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. 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.

### **XII. 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.

### **XIII. 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/math-center/>

To contact the Physical Sciences and Process Technologies 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 Life	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 General Chemistry I (CHEM 1312)

Updated August 2017

## 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)

Virtual Campus  
Brazosport College

Check Your Computer   Technical Support Chat   First Time Login Help   Distance Learning Website

Fall 2018 courses will be available August 27.

If you are having technical issues, unable to log in or see your course: [text chat with technical support](#), email [helpdesk@brazosport.edu](mailto:helpdesk@brazosport.edu) or call [\(979\) 230-3266](tel:9792303266).

**To Log in:** Enter your Brazosport Username and Password. If you forgot your password contact the helpdesk using the above contact information. If this is your first time here, view [First Time Login Help](#).

If in need of an overview on how to use online course tools (Email, Discussions, Dropbox, Quizzes, Grades) reserve space for the [Online Course Tools Tour](#) (formally known as Virtual Campus Tour) which is available each semester online or on-campus.

By logging into the Virtual Campus you agree to be bound by the terms of [BC's Student Security Agreement](#). Furthermore, you agree to be bound by any subsequent revisions of this agreement.

Username \*

Password \*

Log In

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. x: 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.

## HONOR'S OPTION

An honors option is available for this course. To complete the honor's option, you will need to submit the honor's contract, and present an honor's project at the end of the semester.

1. **Topic** – The topic range is quite broad. The criterion is some aspect of chemistry as it relates to society, an average person's life. The topic should be narrow enough that it can be covered in at least some depth in a 10-minute presentation. Topic should be approved by the instructor.
2. **Components** –
  - Bibliography – A written list of references in some acceptable format.
  - Outline – Written, to be turned in along with the bibliography at least one week prior to the presentation.
  - Presentation – The presentation would be oral and may be supplemented by use of the whiteboard, flipcharts, transparencies, or PowerPoint. The presentation will be scheduled by the honor's director (Carrie Pritchett) before the end of the semester.