Brazosport College

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

Instructor: **Office:**
Office Phone: **email:**
Alt. Phone:

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)

January 2022

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. Chemistry (Textbook only)13th Ed., Chang, Publisher McGraw Hill, 2019. ISBN: 978-126-0162035 (Dr. Lowery sections, required)
1. Connect Chemistry W/Access Card, Chang/Goldsby, 13th Ed., Chang, Publisher McGraw-Hill, 2019. ISBN: 978-1-26-0264852 (Dr. Chu sections, required)
2. Student Study Guide, Chang/Goldsby 12th Edition, 2016, Publisher McGraw-Hill, ISBN: 978-1259286230. (recommend)
3. 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. 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.

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	LECTURE
1	Chapter 14 – Chemical Equilibrium
2	Chapter 14 (cont.)
3	Chapter 14 (cont.) Chapter 13 – Chemical Kinetics
4	Chapter 13 (cont.)
5	Chapter 13 (cont.) **Exam 1**
6	Chapter 15 – Acids & Bases
7	Chapter 15 – Acids & Bases
8	Chapter 16 – Acid-Base Equilibria & Solubility Equilibria
9	Chapter 16 – Acid-Base Equilibria & Solubility Equilibria **Exam 2**
10	**Spring Break**
11	Chapter 17 - Thermodynamics
12	Chapter 18 – Electrochemistry
13	Chapter 18 – Electrochemistry (cont.) **Exam 3**
14	Chapter 24 – Organic Chemistry
15	Chapter 24 – Organic Chemistry **Exam 4**
16	**Final** – See College Schedule

Recommended Homework Problems in the Textbook
14 (8,13,15,17,21,29,37,39,43,51,53,57)
13 (5,15,17,18,19,21,27,29,37,41,49,52,71)

15 (4,6,16,18,20,31,40,42,46,52,62,66,73,78)
16 (4,8,10,14,20,22,31,37,44,46,58,60,70,78)

Recommended Homework Problems in the Textbook (cont.)
17 (2,5,10,14,18,20,24,26,30,32,52)
18 (2,6,12,16,18,21,22,24,29,30,36,39)

24 (3,6,12,14,16,23,25,26,28,31,35,36,41,42)

Important Semester Dates:
Last Day to Withdraw from Classes– Check BC Academic Calendar - http://catalog.brazosport.edu/index.php

Office Hours:
For fulltime faculty, office hours may change from semester to semester. Current faculty office hours are included on the syllabus, see link: https://brazosport.edu/faculty-and-staff/resources/course-syllabi-instructor-information/

For an adjunct faculty, no office hours are required, and they are not assigned an office. To set up an appointment with an adjunct, contact the instructor as per the email address on the syllabus, see link: https://brazosport.edu/faculty-and-staff/resources/course-syllabi-instructor-information/

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

VII. ACADEMIC HONESTY

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.

Alex Crouse, Director of Student Life and Title IX Coordinator
979-230-3355; alex.crouse@brazosport.edu

Mareille Rolon, HR Coordinator and Deputy Title IX Coordinator
979-230-3303; mareille.rolon@brazosport.edu

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).

Class attendance and participation will be important to your success. Come to class prepared. This means that you should spend **at least six hours per week outside of class** studying and doing homework assignments. Space out your studies evenly. Your retention and understanding of the material will be enhanced if you follow these simple rules.

Being late for class is an extreme annoyance to the entire class. Be on time! Leaving class early is also an extreme annoyance to the entire class. 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 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.

For Connect Chemistry you must complete the following:

Homework: You will be using "Connect" for homework. The link to the homework website is http://connect.mheducation.com/class/j-chu-spring-2019---mw-11am. You will need an access code to register for "Connect". The access code is bundled with your textbook. If you bought a used textbook, you can purchase the access code at http://connect.customer.mheducation.com/students-how-to-order/.

Due date for homework is posted in CONNECT.

A. Grading:

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

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 hand written notes, containing equations, etc., to the exams. The material to be covered on each exam is as follows:

Exam	Chapters
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.

General Chemistry II

Safety:

1. Safety goggles must be worn at all times in the laboratory.
2. Know the locations of eyewashes, showers, fire extinguishers and exits.
3. Use common sense.
4. Never point the open end of a test tube at someone.
5. Bare feet are NOT allowed into the laboratory. Open sandals and shoes are discouraged.
6. All broken glass goes in the glass boxes located on the ledges above the benches.

Laboratory Housekeeping:

1. Arrange apparatus neatly and compactly. Keep all books except the laboratory manual off the laboratory workbench.
2. Do not throw filter paper or solid materials into the water troughs or sinks.
3. Keep all reagent bottles clean (especially acids and bases).
4. Keep the reagent-dispensing area clean. Pay particular attention to keeping the balances clean and in order. If you spill chemicals, clean them up immediately. Put caps back on reagent containers.
5. At the end of the laboratory period, clean off your workspace with a sponge or wet paper towel. Check to see that the gas and water have been turned off. You are responsible for keeping the area neat. Repeated failure to do so may result in loss of credit.

CLEAN UP STARTS 10 MINUTES BEFORE THE OFFICIAL END OF THE CLASS PERIOD.

When the time is up, you are supposed to be out of the laboratory. Failure to properly budget your time is presumptive of poor planning and your grade may suffer.

Grading:

1. Most experiments include a Pre-lab **quiz** (25 points), which must be administered at the beginning of the lab period in which the experiment will be performed. The Pre-lab exercises for the experiment can be used as an aid for the quiz and must be turned in with the quiz at the same time. There will be no makeup quizzes. You are expected to come to the lab prepared to perform the assigned experiment.
2. The Data Sheets and Observations (50 points) and the Post-lab exercises (25 points) will be due at the end of the period following the completion of the experiment.
3. The Data Sheets and Observations must be completely filled out in ink. When you make an error, cross it out with a single line. Do not use liquid paper or obliterate the error. For example: ~~eror~~ error

References:

Occasionally reference data may be required on some of the compounds used in lab. Consult the CRC Handbook of Chemistry and Physics. A copy of the **CRC** can be found in the lab.

Working With Your Lab Partner

Lab Partner's Name _____

Best way to contact (phone, email) _____

To become a productive lab partner, develop and fine-tune the following skills and abilities:

1. RESPONSIBILITY. Before leaving the lab, make sure both you and your lab partner have completely filled out both you and your partner's data sheets. This is your insurance policy.

2. LISTENING SKILLS. You must be able to put your own thoughts aside and listen without interrupting or interpreting what your partner is saying. Try it - it's not easy.

3. SELF-CONFIDENCE. You must believe in yourself and in the worth of your contributions. Speak up!

4. OPEN-MINDEDNESS. Welcome change and listen to the idea's others bring.

5. CREATIVITY. Try stretching yourself outside of your routines. Try a different method. It might work better than your current method.

6. THOUGHT. Keep your goal in sight. Instead of following the lab manual like a recipe, consider the instructions to be a guide. When you make an error, how can you adapt the manual's procedure to still reach your goal? Which type of balance will give you enough significant digits?

7. RELIABILITY. Do what you say you're going to do.

8. OBJECTIVITY. Assess ideas, thoughts, and opinions from all sides, not just yours.

9. OPTIMISM. Look at problems as opportunities. Knocking over the beaker containing your product can lead to learning about purification techniques.

10. COOPERATION. You must be able to accept team decisions and work just as hard on other people's ideas as you do on your own.

Adapted from Ern, B. L. and Lawley, C. M. (1992). The office professional as a team player. Office Hours, 229, 1.

Using Desire2Learn for General Chemistry I (CHEM 1312)

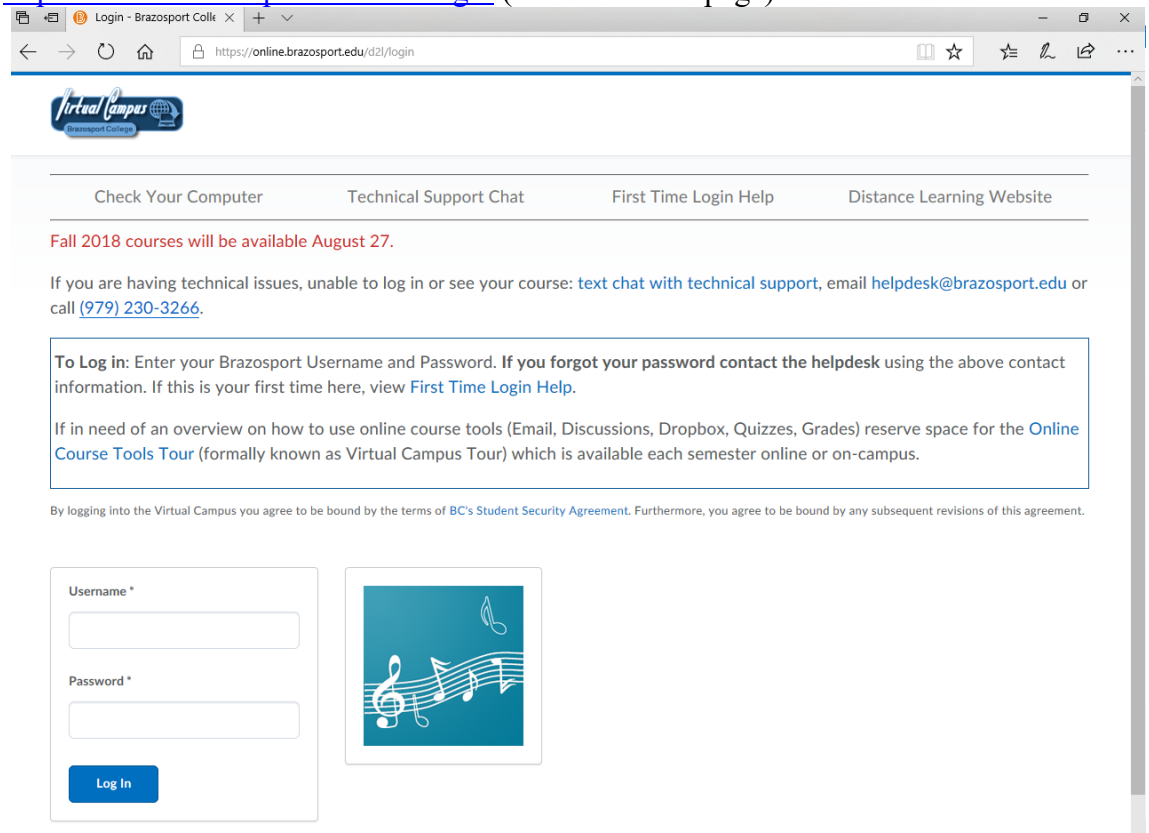
Updated August 2017

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)



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.