Chemistry 162: General Chemistry II

Fall 2021 (Item 3331/3333, Section A/B)

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Office location: Microsoft Teams – Meeting links via the Canvas Calendar/Announcements

Office/online hours: 12 – 2pm Monday, 10am – 1pm Wednesday or by appointment. (On campus/in person office hours offered during/after on-campus lab times listed below.)

Course adjustments due to community response to COVID-19

This course has been adjusted to a fully-online, asynchronous format, meaning that we will not meet for regular lectures. Rather, you will work through Canvas modules on your own time, paying attention to due dates. The course will consist of approximately 8 modules (subject to change). Each module will cover approximatel 1 chapter and contain pre-recorded lectures, homework, study guides, notes, online labs, quizzes and/or exams. The intention of recorded lectures is to fill in gaps where the online materials and textbook may not fully explain. I will post some tutorials but note that your masteringchemistry also links to video tutorials, from the author of the textbook, for most calculations performed in this class. Office hours, posted above, will be live and online, through Microsoft Teams. I anticipate that this course will be most successful if we maintain steady communication. Please know that you can always reach out to me via any means necessary to discuss any difficulties you are having with the course.

Course Information

Chem 162 is the second of a three-course introductory chemistry sequence intended for science and engineering students. It is expected that students have mastered the material from 161 and are not in need of review. The 161/162/163 series covers atomic structures, stoichiometry, solutions, gas laws, periodic law, bonding, molecular orbital theory, colligate properties, radioactivity, thermo- chemistry, equilibrium, acids, bases, oxidation-reduction, electrochemistry, kinetics, and some organic chemistry. Courses take a quantitative approach and include lecture, discussion, in-class activities, and lab work.

Prerequisite: CHEM 161 with a C- or better. If you had difficulty with mathematical concepts for161, reviewing them prior to Chem162 (and 163 also) is strongly encouraged.

Course Outcomes

After completing this class, students should be able to:

- Describe how a system and its surroundings exchange energy in the form of heat and/or work at both the molecular and macroscopic levels.
- Predict whether chemical reactions and physical processes are either endothermic or exothermic based on calculations of the change in enthalpy.
- Use the kinetic-molecular theory to explain the behavior of gases from a molecular perspective and apply the ideal gas law.
- Describe intermolecular forces and chemical bonds and how they influence physical properties and phase transitions.
- Predict whether a solute and solvent will mix to form a solution based on enthalpy and entropy of solvation, and calculate the resulting changes in the colligative properties.
- Apply the basic principles of collision theory to explain the energetics of a chemical reaction and determine how the reaction rate is affected by reactant concentration, temperature, molecular sterics, and the addition of a catalyst.
- Predict reactant order and formulate an experimental rate law using the initial rate method or the integrated rate law method and judge the reasonableness of a proposed reaction mechanism.
- Develop laboratory practices for conducting experiments and reporting experimental results within the context of the scientific method (including the proper application of significant figures, precision, and accuracy)

Materials

1. Inclusive Access Textbook (available through Canvas): Tro. "Chemistry, Structure and Properties" 2nd edition, Pearson Prentice Hall, 2017 with Mastering Chemistry Access Code (Custom)
2. Internet and Computer access.

Canvas

Course activities including assignments, labs and upcoming tests will be posted on the canvas website

This course will be composed of 7-8 Canvas modules. Each module may contain lectures, online labs, homework, classwork and quizzes. Some modules may be missing one or more of these components. You are free to work through the published modules on your own time, respecting the lenient due dates. Some modules may not be published at the beginning of the quarter but will be published in the coming weeks. To login: go to http://bc.instructure.com and use your BC network login/password.

Laboratory (mostly online with some on-campus options)

- Modified, online labs have been created for this quarter. These will involve making observations in videos, recording protocols/data, performing calculations and interpreting results. Some, individualized results will be accessed through the lab specific spreadsheets in the Canvas "Collaborations" tool.
- This quarter you will have the opportunity to attend 3, on-campus lab sessions. If you would like to attend any of these sessions, you will need to sign up at least 24 hours in advance using this link: https://www.signupgenius.com/go/9040C44AEAF29A2FC1-chem.
- Also, before you come to campus each day you will need to complete this online health attestation: https://www2.bellevuecollege.edu/campuscheckin/
- These on-campus sessions can replace many online labs. Reports for these on-campus labs will be in the form of an oral report and notebook check prior to leaving lab. This means you will not have to complete a written report sheet if you choose this on-campus option. In addition, you will have live access to your instructor to ask questions related to course material.
- During each lab period, S323 will be availale for working on synthesis and analysis of biodiesel, while a connecting lab room, S324, will be available for short observations and protocol related to important phenomena studied in General Chemistry II.
- The on-campus lab schedule is as follows (tentative, based on changes in public health guidelines):

Week	Date	Session Time	Activity
3	10/12	11-2	Heat of combustion and biodiesel synthesis
6	11/2	11-2	Physical properties observations and biodiesel analysis
9	11/23	11-2	Biodiesel analysis

Quizzes: Each module will contain a summative quiz.

Late work: will be accepted at a penalty of 10% for every weekday late. Consult with instructor for special circumstances.

Schedule: See course modules on Canvas

Grading (Subject to change)

1. 8 Labs (5-10 pts each)
2. 7 quizzes (20-40 pts each) and 1 cumulative final exam (40-50 pts)
3. Mastering Chemistry homework and classwork (30-40 pts total)
4. Research project (30 pts)

5. Discussion posts (15-20 pts total)

Grade Breakdown

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
>94%	93-90	89-87	86-84	83-80	79-77	76-74	73-70	69-67	66-64	63-60	<60

Policy on Incomplete grades (I)

According to Bellevue College policy, Incomplete grades will only be awarded for "unforeseen reasons beyond the student's control. The student is responsible for requesting the assignment of an 'I' grade and for demonstrating why the 'I' is appropriate." Incomplete grades in this course will require official documentation of circumstances beyond the student's control.

Also according to Bellevue College Policy: Faculty may issue an incomplete (I) grade if students meet the following conditions:

- Students must have completed **85%** of the required coursework by the time the quarter ends
- Students must have earned at least a C average for all submitted coursework

Instructor's Expectations

1. Show respect and courtesy, do not be disruptive.
2. Take responsibility for your work. If you miss class you need to find out what you missed.
3. Graded material such as answers to lab, homework and test questions must reflect your own thoughts and understanding. Plagiarizing or any form of cheating will not be tolerated.
4. Use your time in lab/class effectively. This is <u>your time</u> to learn. Be prepared and show up on time. Pay attention to class activities. Use class time to reflect on your understanding of course material. If you are falling behind, seek out help/advice from your instructor or fellow classmates. If you are grasping concepts very quickly and find yourself getting ahead of the class, seek out classmates who might need your assistance. After all, the only way to truly learn a subject is by teaching it.

What you should expect of your instructor

1. Goals and learning targets will be clearly defined. Due dates and assignments will be organized and properly communicated.
2. Lessons will address core concepts in a logical pattern and framework. Tests and graded material will directly reflect the core concepts discussed in class and highlighted on homework/lab activities.
3. Suggestions and ideas, both positive and negative, will always be welcomed. Please feel free to discuss with your instructor, any aspect of the class that is causing you confusion as well as any aspect you feel is helping you succeed. This is <u>your class</u> and you can feel free to treat it as such.

Lab Safety

The Science Division is committed to the safety of our students and protecting the environment through the proper usage and handling of chemicals and proper waste disposal in all our science laboratories.
Students, faculty, and staff all share in this responsibility.

Some basic guidelines that apply to all laboratories:

1. Eating or drinking are prohibited in the laboratory. Please keep your food and drinks, including water bottles, inside backpacks or outside of the classroom. Water bottles must be taken outside of the classroom for drinking.
2. Please keep the spaces between benches clear of backpacks, jackets, and other personal items. These items can be placed in designated areas or under the lab benches where they are kept out of walkways.
3. Personal protective equipment can include goggles, gloves and lab coats, depending on the type of laboratory. The instructor is responsible for specifying this during the first lab session of the course. [1]
4. No open-toed shoes, shorts, and tank tops will be allowed in lab. [1]
5. Your instructor will inform you of any additional laboratory safety information and any waste disposal procedures before each lab.
6. Please remove gloves, lab coats, and wash hands before stepping outside of the lab at any time.
7. No visitors or unauthorized person will be allowed in the lab.
8. In case of an accident or emergency, alert the instructor immediately. If it is an emergency, please call 911.
9. More specific safety guidelines are available for each of the specific areas in the Science Division (biology, chemistry, physics, and earth sciences) where the hazards are different depending on the program. These specific safety guidelines will be provided by the instructor.
10. Compliance to the above rules is expected. These rules will be enforced in the following manner:
    a. First incident of non-compliance: verbal and written warning given by instructor.
    b. Second incident of non-compliance: removal from classroom and student cannot complete lab assignment (student will receive a zero).
    c. Repeated or severe incidents of non-compliance: report directly to Student Conduct Manager and receive a zero on the assignment.

Accessibility

The online elements of this course are designed to be welcoming to, accessible to, and usable by everyone, including students who are English-language learners, have a variety of learning styles, have disabilities, or are new to online learning. Be sure to let me know immediately if you encounter a required element or resource in the course that is not accessible to you. Also, let me know of changes I can make to the course so that it is more welcoming to, accessible to, or usable by students who take this course in the future.

Affirmation of Inclusion

Bellevue College is committed to maintaining an environment in which every member of the campus community feels welcome to participate in the life of the college, free from harassment and discrimination.

We value our different backgrounds at Bellevue College, and students, faculty, staff members, and administrators are to treat one another with dignity and respect.

Affirmation of Inclusion (https://www.bellevuecollege.edu/inclusion/)

Reasons of Faith and Conscience

Reasonable Accommodations for Reasons of Faith and Conscience: Students who will be absent from course activities due to reasons of faith or conscience may seek reasonable accommodations so that grades are not impacted. Such requests must be made within the first two weeks of the course to the office of the Associate Vice President of Student Affairs (see Bellevue College Policy 2950 (https://www.bellevuecollege.edu/policies/id2950/)). In the event you feel you are being discriminated against based on faith or conscious, you may refer to the procedures outlined in the college's Discrimination, Harassment and Retaliation Policy 1440P (https://www.bellevuecollege.edu/policies/id-1440p/).

Annual Notice Non-Discrimination

Bellevue College does not discriminate on the basis of race or ethnicity; creed; color; national origin; sex; marital status; sexual orientation; age; religion; genetic information; the presence of any sensory, mental, or physical disability; or veteran status in educational programs and activities which it operates. Bellevue College is prohibited from discriminating in such a manner by college policy and by state and federal law. All college personnel and persons, vendors, and organizations with whom the college does business are required to comply with applicable federal and state statutes and regulations designed to promote affirmative action and equal opportunity.

Reports of gender and sex-based based discrimination, sexual misconduct, or retaliation by a student should be raised with the Title IX office (see 1440P2 for contact information). In cases where the impacted party is a student and the responding party is a college employee, the Title IX coordinator will direct the matter to the Office of Human Resources (HR). All other reports, including all reports where the impacted party is an employee, should be raised with the HR. If a report is against personnel in the Title IX office or HR, it should be submitted to the president's office for referral to an alternate designee.

Equal Opportunity (http://www.bellevuecollege.edu/equal/)

Confidentiality and Mandatory Reporting

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings. I will seek to keep information you share private to the greatest extent possible. However, I am required to share with the Title IX Coordinator any and all information regarding sexual assault and other forms of sexual misconduct (e.g. relationship violence, stalking) that may have occurred on campus or that impacts someone on campus. Students may speak to someone confidentially by contacting the BC Counseling Center at (425) 564-

2212. The Title IX Office can be contacted at 425-564-2641 and more information can be found at Title IX (http://www.bellevuecollege.edu/titleix/).

If you have any concerns, you may report to: Report Concerns (https://www.bellevuecollege.edu/reportconcerns/).

Division Statements

The Science Division Statement can be found here: https://www.bellevuecollege.edu/science/

Plagiarism is defined as "the practice of taking someone else's work or ideas and passing them off as one's own." – the dictionary.

Believe it or not, plagiarism is very easy to detect. Plagiarism can typically be verified through a simple google search. So please make sure all work is IN YOUR OWN WORDS.

This link provides a good, short summary of how to avoid plagiarism: Avoiding Plagiarism

Student Conduct Code and Academic Integrity

Any act of academic dishonesty, including cheating, plagiarism (using the ideas or words of another as one's own without crediting the source), and fabrication, and inappropriate/disruptive classroom behavior are violations of the Student Conduct Code of Bellevue College. Examples of disruptive behavior include, but are not limited to, repeatedly talking out of turn, arriving late or leaving early without a valid reason, allowing cell phones to ring, and inappropriate behavior toward the instructor or classmates. The instructor can refer any violation of the Student Conduct Code to the Manager of Student Conduct for investigation. Specific student rights, responsibilities, and appeal procedures are listed in the Student Conduct Code at: Student Code

Important Links

See "Important Links" page online for more information about the E-mail and MyBC, Public Safety, the Academic Calendar, the Academic Success Center, and more.

Disability Resource Center (DRC)

The Disability Resource Center serves students with disabilities. Common disabilities include physical, neurological (e.g. Autism, ADD/ADHD), and mental health (e.g. depression, anxiety). If you are a student

who has a disability or if you think you may need accommodations in order to have equal access in your classes, programs, activities, and any other services, please contact the DRC.

If you require assistance in an emergency, please meet with your individual instructors to develop a safety plan for while in class and contact the DRC to develop a safety plan for while you are elsewhere on campus.

The DRC office is located in building B Room 132. You can contact the DRC by stopping by the office at B132, calling our front desk phone number (425) 564-2498, emailing drc@bellevuecollege.edu. Deaf students can reach us by calling TTY: (425) 564-6189, or by Skype (account name **DRCatBC**). For more information about the services we offer, including our Initial Access Application, visit our website at Disability Resource Center (http://www.bellevuecollege.edu/drc).

Service Animals are allowed in this classroom. Emotional Support Animals need to be approved through the DRC. All other animals will be asked to leave. If you believe you need your animal with you, please connect with the DRC and refrain from bringing your animal until a decision has been made.

Final Exam Schedule

The final exam schedule can be found on the Bellevue College academic calendar and the date for the final exam in this class will be posted to Canvas. In case of an emergency during finals your grade will be calculated based on what have earned to date. Establishing an emergency situation requires official documentation.

Additional Information

A note about accessing Canvas from the People's Republic of China: some users have reported that they do not have full access to all Canvas functionality from within the People's Republic of China. This appears to be due to Canvas' parent company, Instructure, not fully committing to Chinese government requirements regarding internet operations within the country. The Chinese government does not inform foreign entities of their policy updates; therefore, Bellevue College cannot anticipate access to Canvas.

If you will be in China during the quarter, you should prepare for intermittent and uncertain access to Canvas.

Source: Access to Canvas in China (https://support.canvas.fsu.edu/kb/article/1157-access-to-canvas-in-china/)