

COURSE TITLE: CH 202 Chemistry for Engineering Majors II **CREDITS:** 5

LECTURE (HYBRID) CRN: 40591

INSTRUCTOR: Brian Reed, Ph.D. **EMAIL:** reedb@linnbenton.edu

OFFICE: IA-204 **PHONE:** 541-917-4622

Mondays and **Tuesdays** online lecture: recorded lecture video / activities for you to work on based on your own schedule.

Wednesdays and **Fridays** In-person class meeting in MH 113 from 10 - 10:50 AM

STUDENT HOURS / DROP-IN HELP / ADVISING:

Please see my schedule for Drop-in hours and Student Hours by Appointment:

[Brian Reed Office Schedule Spring 2022](#)

INSTRUCTOR WEBSITE:

Hopefully updated soon!

LABORATORY (IN-PERSON)

LAB INSTRUCTOR: Kate Schilke, Ph.D. **EMAIL:** schilkk@linnbenton.edu

Thursdays 11:00 AM to 1:50 PM in MH 214 (**CRN 43652**)

Thursdays 2:00 PM to 4:50 PM in MH 214 (**CRN 43653**)

OFFICE: MH 214 (teaching lab)

OFFICE HOURS: Thursdays 10 - 11 AM in MH 214, or by appointment on Zoom
(Zoom link will be posted on lab section Moodle page)

Science Help Desk: The Science Help Desk is a drop-in help in chemistry, physics, geology, and astronomy courses.

The in-person Science Help Desk is located on the first floor of Madrone Hall in the atrium area. The remote Science Help Desk is offered via Zoom. Visit the following Google Sheet for the live schedule:

[Spring 2022 - Science Help Desk](#)

You can also find hours of the Science Help Desk at the Learning Center website at

<https://www.linnbenton.edu/student-services/library-tutoring-testing/learning-center/science-support.php>

Course Description:

The second of a two-term sequence designed specifically to provide engineering majors with a fundamental understanding of chemical reactions and scientific measurement. This course will introduce students to principles, laws and equations that govern our understanding of chemical combination.

Prerequisite:

CH 201 Chemistry for Engineering Majors I and MTH 111 College Algebra with a grade of C or better. This course includes a laboratory component.

Workload Expectation:

Students earning "As" or "Bs" in the course typically spend 12-15 hours per week on this class. This includes time spent in lecture and lab, as well as reading from the textbook, practicing problems, and completing the homework sets. To make the best use of your time and get the most out of the class, practice a little each day, be prepared for lecture by reading through the text ahead of time, work with your classmates on the homework assignments, and ask questions in class or during student hours.

Required Materials:

- Textbook: *Chemistry: The Molecular Nature of Matter and Change, 9th Ed.*, Silberberg (The older 5th, 6th, 7th, or 8th editions are also acceptable, and are relatively inexpensive)

The bookstore carries the e-book version of the text, but you may be able to find a hard copy of an older edition for much less money.

- Personal Safety Goggles (available through the bookstore and required for lab)
- Carbonless Lab Notebook
- Scientific Calculator

Optional Materials: Lab coat

Course Outcomes:

Upon successful completion of this course, students will be able to:

1. Solve engineering-related scientific problems with quantitative methods regarding phase changes, rates of reactions, and chemical equilibrium.
2. Solve engineering-related scientific problems with quantitative methods involving thermodynamics and electrochemistry.
3. Apply chemical principles related to quantum mechanics, atomic orbital theory, periodic trends, and covalent bond theory.
4. Apply chemical principles related to chemical kinetics, equilibrium, thermochemistry, and electrochemistry.
5. Work safely in a laboratory environment while observing and accurately recording measurements related to chemical phenomena.

Grading:

Lecture		
Homework Sets	Best 8 of 9 x 20 pts.	160 pts.
Section Exams	4 x 50 pts.	200 pts.
Final Exam		120 pts.
Lab		
Laboratory Reports	10 x 20 pts.	200 pts.
Total		680 pts.

90-100% A, 80-89.9% B, 70-79.9% C, 60-69.9% D, < 59.9% F

Exams:

- Throughout the term several exams will be given covering specific topics including 4 section exams (in-class on Friday of week 3, 5, 7, and 9) and one comprehensive final exam (see finals schedule).
- These will be focused on practical application of the course material to solving both qualitative and quantitative problems.

Homework:

- Learning chemistry is like learning a foreign language, you should study and practice every day.
- Doing the homework throughout the week as material is covered will help you retain information and build your skills more efficiently than doing it all at once just before the due date.
- Homework should be emailed to me as PDFs (there are instructions on how to use your phone to scan in a pdf using Google Drive on the course page) by 11:59 PM on the due date (see class schedule). *You should CC yourself on the email so that you'll know it's been sent (think of this as your receipt).*
- Each problem will be checked for a reasonable attempt at solving, and be graded not only on the solution, but the effective communication of the solution process.
- Homework will be accepted 1 day late for up to 75% credit and will not be accepted after the solutions are posted.
- The lowest homework grade will be dropped.

Labs:

- All Lab information will be posted on the CH 202 Lab Moodle page (you do not need to purchase a lab packet for this course)
- Students arriving to lab after the lab introduction (~15 minutes) may not be allowed in lab that day. (you could miss important changes to the lab or safety information)
- All labs include 2 submissions: a Pre-lab write-up and Post-lab write up
 - Pre-lab assignments are due at the start of lab.
 - Post-lab assignments are due one week later, as per instructor direction
- Passing CH 202 requires passing the lab section with > 70%.
 - Late pre-labs will be accepted with 1pt deduction up to 1 week late.
 - Late post-labs will be accepted with 2 pt deduction up to 1 week late.
 - Lab materials accepted beyond a week may be accepted with instructor discretion for up to half credit.
 - Not turning in lab materials receives a score of zero.
- You can miss up to two in-person labs and have sample data supplied in order to complete the post-lab assignment for 75% credit. Additional missed labs will count as a zero. Please communicate with your instructor to discuss this option.

CH202 Spring 2022 Tentative Schedule

Weekly Schedule	In-Person Lecture Wednesday and Friday Exams on Fridays except final	In-Person Lab - Thursday Pre-lab Assignment: hand in start of lab Post-lab Assignment: 11:59pm next Wed	Homework Due by 11:59 PM via email on date listed
Week 1 3/28 – 4/1	<u>Chapter 6</u> – 6.1, 6.2, 6.3 Friday – Inservice no classes	Lab #1: Chemical Reactions LR	HW #1 <i>Due Tuesday (4/5)</i>
Week 2 4/4 – 4/8	<u>Chapter 6</u> – 6.4, 6.5, 6.6 <u>Chapter 5</u> – 5.1, 5.2	Lab #2: Calorimetry	HW #2 <i>Due Tuesday (4/12)</i>
Week 3 4/11 – 4/15	<u>Chapter 5</u> – 5.3, 5.4, parts of 5.5 and 5.6 <u>Chapter 12</u> – 12.1, 12.2 Exam #1	Lab #3: Hess's Law	HW #3 <i>Due Tuesday (4/19)</i>
Week 4 4/18 – 4/22	<u>Chapter 12</u> – 12.3, 12.4, 12.5 <u>Chapter 13</u> – 13.1, 13.2, 13.3, 13.4, 13.5	Lab #4: Enthalpy Changes of Water	HW #4 <i>Due Tuesday (4/26)</i>
Week 5 4/25 – 4/29	<u>Chapter 13</u> – 13.6 <u>Chapter 16</u> – 16.1, 16.2, 16.3, 16.4 Exam #2	Lab #5: Freezing Point Depression	HW #5 <i>Due Tuesday (5/3)</i>
Week 6 5/2 – 5/6	<u>Chapter 16</u> – 16.4, 16.5 <u>Chapter 17</u> – 17.1, 17.2, 17.3, 17.4, 17.5	Lab #6: Kinetics of Crystal Violet	HW #6 <i>Due Tuesday (5/10)</i>
Week 7 5/9 -5/13	<u>Chapter 17</u> – 17.6 <u>Chapter 18</u> – 18.1, 18.2, 18.3 Exam #3	Lab #7: Le Chatelier's Principle	HW #7 <i>Due Tuesday (5/17)</i>
Week 8 5/16 – 5/20	<u>Chapter 18</u> – 18.4 <u>Chapter 20</u> – 20.1, 20.2, 20.3	Lab #8: Polyprotic Acid Titrations	HW #8 <i>Due Tuesday (5/24)</i>
Week 9 2/23 – 5/27	<u>Chapter 20</u> – 20.4 <u>Chapter 21</u> – 21.1, 21.2 Exam #4	Lab #9: Thermodynamics	HW #9 <i>Due Friday (6/3)</i>
Week 10 5/30 – 6/3	<u>Monday – Memorial Day</u> <u>Chapter 21</u> – 21.3, 21.4 Review for Final	Lab #10: Electrochemistry	
Week 11 6/6 - 6/10	Final Exam, see course page for details.	No in-person meeting Last lab submission: Due Wednesday, 6/8 by 11:59 PM	

NOTE: This schedule is set up to reflect the topics and pacing that would be covered if the course were held fully in-person. The in-person lectures on Wednesdays and Fridays, and the Labs on Thursdays are the only scheduled meetings. The remainder of the material will be delivered as a series of recorded lectures (taking the place of class on Monday and Tuesday).

This schedule of topics, homework due dates, and quiz dates are tentative, and subject to change at the instructor's discretion.

Expectations:

I expect that my students will be involved in class. This includes being present, asking questions and participating in discussions. You should come to class prepared (bring your book, paper and pencil, a calculator, and anything else you might need). No grade will be assigned for attendance in lecture, but to do well in this course it is expected that you will attend all class meetings. If a situation arises that makes it necessary to miss a class, it is your responsibility to obtain notes from a classmate or come to student hours for help.

HOW TO BE SUCCESSFUL IN THIS CLASS

- Attend class, and make use of student hours, review sessions, and other resources.
- Be prepared for class by reading the textbook chapters or other materials when assigned. Classroom experiences will be richer for you when you have background information about the subject.
- Review the syllabus and learn policies and procedures for this class. Understand your rights and responsibilities as a student and as a class member.
- Learn how to ask clarifying questions and how to be a coach for your classmates.
- When confused, challenged, frustrated or having an “aha” moment, visit the instructor during their virtual office hours.
- Be engaged and challenge yourself. You will get out of this class what you put into it.

COVID information for in-person class time:

As you know, the Covid virus has taken a serious toll on area hospitals. As a result, there is a state-wide requirement that all students and faculty wear masks when on campus, including when in class. You can read more details about [LBCC's Covid policies](#) here.

Because I care about your health, the health of my family and our class community, I will be upholding the requirement that all students wear a mask over their nose and mouth during our class. I appreciate your support in advance as this will enable us to have a safe class together this fall and focus on learning. If you don't wish to wear a mask, please talk with an advisor in the advising center to help you switch to online or virtual classes. Anyone not wearing a mask over the nose and mouth will be required to leave the class. Free masks will be available on campus in case you forget yours.

Course Evaluations:

Student feedback is important to improve this course and to help the instructor know how to adjust teaching methods. Your feedback is taken seriously and does influence future versions of the course. The Student Evaluations of Teaching (SETs) are anonymous, and links to the evaluations will be emailed to your student email account after the 5th week of the term. I encourage you to take this opportunity to provide constructive feedback on the class. Thank you in advance for your input!

Academic Integrity:

It is understandable that you will discuss your homework and other assignments with your classmates and that is fine, but you are expected to write up your own results, whether it is on paper or using a spreadsheet or other program.

The use of online platforms such as Chegg for any exams or quizzes is considered cheating and will be taken seriously. I assume that you are ethical and honest. However, if there is an incident of academic dishonesty, which includes providing your work to another student inappropriately, you will receive a score of zero for that assignment/test and the incident will be reported to the college administration

for possible further disciplinary action. If there is a second offense or if it is determined that the misconduct extends to multiple assignments, you may receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action. **If you aren't sure if something is allowed or not in your classes, just ask your instructor.**

Drop/Withdraw Policy:

If you are withdrawing from the class you must file a Schedule Change Form with Registration or use WebRunner. If you formally drop the class **by Monday of the second week of the term**, you will receive a tuition refund. If you withdraw after the Monday of the second week of instruction through the seventh week a **'W'** will show up on your transcript. No withdrawals are allowed after the end of the seventh week. An instructor may not assign a "W" grade.

If you received financial aid or veteran's benefits, PLEASE talk with associates at the appropriate office to determine what effects on eligibility dropping a course will have. Don't jeopardize your eligibility!! You can contact the Financial Aid Office by calling (541) 917-4850 or by visiting the Financial Aid Office in Takena Hall.

If you stop attending the course without formally withdrawing you will continue to accumulate grades (zeroes for all assignments not turned in) and will receive the grade assigned by the instructor. You will also be held accountable for all charges on your account.

Nondiscrimination and Non-Harassment:

Linn-Benton Community College is committed to providing an atmosphere that encourages individuals to realize their potential. We embrace diversity and inclusion of all persons. The college prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, marital status, disability, veteran status, or age in any area, activity or operation of the college. In addition, the college complies with related federal, state, and local laws (Civil Rights, Disability & Rehabilitation Acts, Veterans Acts).

LBCC is committed to providing equal opportunity in all of its programs, policies, procedures, and practices, and the college shall promote equal opportunity and treatment through application of this policy and other college efforts designed for that purpose. For further information see Administrative Rule No. 1015-01 at <http://po.linnbenton.edu/BPsandARs/>

Center for Accessibility Resources:

You should meet with your instructor during the first week of class if

- You have a documented disability and need accommodations,
- Your instructor needs to know medical information about you, or
- You need special arrangements in the event of an emergency.

If you believe you may need accommodation services, please contact the Center for Accessibility Resources (541) 917-4789. If you have documented your disability, remember that you must make your request for accommodations through the Center for Accessibility Resources Online Services web page every term in order to receive accommodations.

Veterans and active duty military personnel with special circumstances are welcome and encouraged to communicate these, in advance if possible, to the instructor.

Students Rights, Responsibilities, and Conduct Policy:

LBCC students have rights: the right to free speech, the right to assemble, the right of a free press, etc. LBCC students also have responsibilities to their community: the responsibility to participate and engage in class, the responsibility to advocate for their needs (ask for help), the responsibility to support a respectful teaching and learning environment, the responsibility to treat all persons with respect, the responsibility to be truthful and honest in all work and communications, and the responsibility to follow staff directions, local, state, and federal laws. Rights and responsibilities balance together to create the best learning environment. For example, while you have free speech in the café or courtyard, in class the instructor decides whose turn it is to talk and what the topics for conversation will be. Students are free to believe what they believe, but instructors may require students to learn and recite concepts, principles, or theories for a class even if the student does not believe those concepts. You play a role in creating a positive community at LBCC. Please review your rights and responsibilities at this link: www.linnbenton.edu/go/studentrights.

If you believe a student is violating your rights, ask to be treated with respect. If that does not resolve the situation, report to Associate Dean Dr. Lynne Cox, Takena 107. If you believe a faculty member or LBCC employee is violating your rights, please report to Human Resources, Scott Rolen, CC-108. In cases of immediate danger, report to Public Safety, Red Cedar Hall (RCH-119), 541-926-6855. (We encourage all students to enter this Public Safety phone number into their cell phone.)

Personal Empowerment Through Self-Awareness:

LBCC is launching a new training called “Personal Empowerment Through Self-Awareness.” This training is an online video series on dating, sexual consent, and on preventing sexual violence or partner violence. Every student has a right and healthy learning climate. Every new student is required by federal law to complete this training to learn how to safeguard yourself and others from sexual assault. We ask students to watch for email notification and to ensure that they complete this new training. (For example, do you know the number one date rape drug? It’s not what you think! Check out the training.) This online series reviews federal and Oregon law and is designed for your safety. The training will also direct you how to report dating, sexual, or partner violence to LBCC officials.

Note: The instructor reserves the right to make changes to the course syllabus and schedule.