COURSE TITLE: CH 202 Chemistry for Engineering Majors II

CREDITS: 5 **CRN:** 40591

LECTURE: Monday, Tuesday, Wednesday, and Friday from 10:00-10:50 AM in F-115

LABORATORY: Nelly Donis donisn@linnbenton.edu

Thursdays 8:00 AM to 11:50 AM in MH 214 **(CRN** 43652**)**

Thursdays 11:00 AM to 1:50 PM in MH 214 **(CRN** 43653**)**

INSTRUCTOR: Brian Reed, Ph.D. **EMAIL:** reedb@linnbenton.edu
OFFICE: IA-204 **PHONE:** 541-917-4622

OFFICE HOURS: Monday 4:00-4:50 PM Wednesday 2:00-2:50 PM
Thursday 1:00-1:50 PM Friday 1:00-1:50 PM
*And by appointment Wednesday 4-5 PM and Thursday 11-12 PM

To schedule an appointment, access my calendar and sign up from my instructor website.

INSTRUCTOR WEBSITE:

Go to www.linnbenton.edu. Click QuickLinks, click Instructor Website, click Reed, Brian.

Science Help Desk: In addition to instructor office hours the Science Help Desk is an excellent resource! The Science Help Desk is located on the first floor of Madrone Hall in the atrium area. The Help Desk is manned approximately 20 hours per week. Hours of the Help Desk are posted in the Help Desk area.

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.

Required Materials:

Textbook: *Chemistry: The Molecular Nature of Matter and Change, 8th Ed.,* Silberberg (One of the older 4th, 5th, 6th, or 7th editions is also acceptable, and are relatively inexpensive)

A Carbonless Lab Notebook

A Non-graphing/non-programmable Scientific Calculator

Optional Materials:

-Lab coat
-Personal Safety Goggles

Course Outcomes:

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

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

Calculator Policy:

Students will be required to use a non-graphing/non-programmable scientific calculator for quizzes and/or exams. Department approved calculators are: TI 30xa, TI 30X IIs, Casio fx-260, or HP 10s. If a student does not wish to purchase one of these calculators the department will provide either a Casio fx-260 or HP 10s for use on exams and/or quizzes.

Exams:

All exams are given in class. Students who have conflicts with exam days due to other College functions, illness, or family emergencies must contact the instructor prior to the exam. Make-up exams will not be given without prior notice!

Homework:

To succeed in chemistry, like learning a foreign language, you should study and practice every day. As material is covered you will find the problems are easier to work and not as time consuming as if they are attempted just before the due date. Keep in mind a typical science course takes 3-4 hrs of work per week outside of class for every credit hour.
Refer to the schedule for homework due dates and times. Late homework will not be accepted. Solutions to the homework sets will be available after the due date. Each problem will be checked for a reasonable attempt at solving, and be graded not only the solution, *but the effective communication of the solution process.*

In-Class Exercises:

Throughout the course short individual and group problems may be given in class. These are opportunities to practice application of material covered in lecture and will be collected the next day of class after they are assigned. No make-ups for these in class problems will be given.

Laboratory Reports:

Lab reports are due at the beginning of YOUR next lab session after the completion of the experiment. Late lab reports receive a 10% per day mark down. Your lowest lab report score is dropped. You must receive at least 70% of the total lab points in order to pass the course regardless of passing the lecture. No make-up labs will be given. Also, if you miss more than three labs or turn in fewer than five reports

you will not receive a passing grade for the course. This is a lab class and in order to pass the course you must pass the laboratory component.

Prelab Questions:
Be sure to check the syllabus for which lab is assigned for a particular week. Most lab experiments described in the manual have prelab questions. Many of these questions are designed to emulate the laboratory experiment that is about to be performed. By answering these questions BEFORE the lab period students are able to understand and perform the experiment more effectively. Prelab questions should be done on separate sheets of paper and are due **within the first 5 minutes** of the lab period. The prelab assignments are worth from one to five points of the lab report grade.
No late prelabs are accepted.

Grading:

Lecture		
Exams	4 x 60	240 pts.
Final Exam		130 pts.
Homework Sets	(Best 9 of 10) x 10	90 pts.
In class exercises		30 pts.
Lab		
Laboratory Reports	(Best 8 of 9) x 20	160 pts.
Lab Final		40 pts.
Total		690 pts.

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

Extra Credit: If you complete all your homework sets, your lowest score will be used as extra credit.

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 (this means you should 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 the student's responsibility to obtain notes from a peer.

I expect you to be respectful of everyone in the class, in word as well as behavior. Along these lines, I ask that you turn off your cell phone during class and put it away so as to avoid causing a distraction. If you need to leave class for any reason, please do so quietly.

HOW TO BE SUCCESSFUL IN THIS CLASS

- Attend class.
- 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.
- Challenge your own taken-for-granted notions *and* let the instructor challenge them as well.
- 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 office hours.
- Be engaged and work from your stretch zone. You will get out of this class what you put into it.

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 impact future versions of the course. The Student Evaluations of Teaching (SETs) are anonymous, and links to the form will be emailed to you after the 6th week of the class. The process takes approximately 10 minutes and I encourage you 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. I assume that you are ethical and honest. However, if there is an incident of academic dishonesty (cheating), which includes sharing computer files, 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, you will receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action.

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.

	Mon.	Tues.	Wed.	Fri.	Laboratory	Homework
Week 1 4/1-4/5	**In-service Campus Closed**	Syllabus Review of Ch. 7	8.1 8.2	8.3 8.4	Experiment #1: Periodic Trends	*Ch 8 HW Due **Tues** (4/9)*
Week 2 4/8-4/12	8.4 9.1	9.1 – 9.3	9.4 9.5	9.5 10.2	Experiment #2: Qualitative Analysis	*Ch 9 HW Due **Mon** (4/15)*
Week 3 4/15-4/19	10.2 10.3	10.3 12.1	12.1 12.2	12.2 – 12.4	Experiment #3: Lewis Structures and Molecular Models	*Ch 10 HW Due **Wed** (4/17)*
Week 4 4/22-4/26	**Exam I Chapter 8,9,10**	12.4 12.5	13.1 13.3	13.3 13.4	Experiment #4: Enthalpy of Vaporization of Water	*Ch 12 HW Due **Wed** (4/24)*
Week 5 4/29-5/3	13.4 13.5	13.5	16.1 16.2	16.3 16.4	Experiment #5: Freezing Point Depression	*Ch 13 HW Due **Wed** (5/1)*
Week 6 5/6-5/10	**Exam II Chapter** 12, 13	16.4 16.5	16.5 16.7	16.7 17.1	Experiment #6 The Iodine Clock	*Ch 16 HW Due **Mon** (5/13)*
Week 7 5/13-5/17	17.1 17.2	**Exam IV Chapter 16 (T.H.)** 17.3 - 17.4	17.5	17.6 18.1	Experiment #7: Le Chatelier's Principle	*Ch 17 HW Due **Mon** (5/20)*
Week 8 5/20-5/24	18.1	18.2 18.3	18.4	20.1 20.2	Experiment #8: Solubility and Thermodynamics	*Ch 18 HW Due **Fri** (5/24)*
Week 9 5/27-5/31	**Memorial Day Campus Closed**	20.2 20.3	**Exam V Chapter 17 & 18**	20.4 21.1	Experiment #9: Electrochemistry	*Ch 20 HW Due **Mon** (6/3)*
Week 10 6/3-6/7	21.1 21.2	21.2 21.3	21.4 21.5	Final Review	*Lab Final / Review*	*Ch 21 HW Due **Fri** (6/7)*
Week 11 6/11-6/15 **Final Exams**			**Final 8-9:50 am**			

****Note:** **This schedule of topics, homework due dates, and exam dates is tentative, and subject to change at the instructor's discretion.**