

## ChemBridge • Chemistry in Context • Spring 2019

**Instructor:** Dr. Justin M. Dragna  
**Email:** dragna.teaching@utexas.edu

### Chemistry in Context

The second semester of ChemBridge is broken down into four equal modules that each cover a different fundamental area of chemistry. The title of each unit is linked to the relevant section of the textbook that contains the specific learning outcomes for each unit.

**Module 5 – Nuclear Energy:** This module will examine the connection between matter and energy in the context of nuclear energy. Specifically, we will examine the composition of an atom and its corresponding binding energy.

**Module 6 – Energy from Electron Transfer:** This module will examine work energy in the context of electron transfer in a battery. In particular, we will examine the energy levels of different oxidation and reduction half-reactions.

**Module 7 – The Food We Eat:** This module will examine the energy inside of our bodies in the context of health and nutrition. We will focus on the different energy provided from carbohydrates, fats, and sugars.

**Module 8 – The Water We Drink:** The final module will examine the water purification process in the context of global water systems. Specifically, we will examine the intermolecular bonds between two different water molecules.

### Requirements

**Textbook:** You are not required to purchase a textbook for this course. All lectures and videos stem from the 8th edition of the *Chemistry in Context* textbook by Eubanks, et al. You are welcome to purchase this textbook or any alternative editions. However, there are a plethora of online resources to supplement the material covered in this course. Please remember that most of the relevant textbooks are also available for use in our Chemistry (Mallet) Library in WEL 2.132.

**Calculator:** For exams you need to have a nonprogrammable, scientific calculator. You should be able to pick one up for around \$15.00 anywhere that sells school supplies. I would avoid a solar powered calculator as you cannot count on good lighting in the exam rooms. Any of the TI-30-series will work and by 30, I mean the 30, 34, and 36's with various letters behind them. My personal favorite is the TI-30x. *You will never be permitted to use a programmable calculator or a wireless device as a calculator during an exam.*

**Sapling Learning:** This course makes use of the web-based homework system from Sapling Learning. ALL students must click on the "Sapling Registration" assignment here in Canvas in order to register for this class. Once you are on the Sapling website you will be able to complete the registration and payment.

## Overall Scoring for the Course

I will use six aggregate scores to calculate your overall score in the course.

1. **Post-Program Survey:** score based on completion of the Post-Program Survey
2. **Learning Exercises:** average of the best 40 of 48 learn exercises (eight drops)
3. **Homework:** average of the best 7 out of 8 homework assignments (one drop)
4. **Three-Exam Average:** average of your best 3 of 4 in-class exams (one drop)
5. **Final Exam:** score on the mandatory final exam

Category / Criteria	Weight
Post-Program Survey	5%
Learning Exercises	25%
Homework	5%
Three-Exam Average	45%
Final Exam	20%
Total	100%

Students typically score the highest on the Homework and Learning Exercises. Staying engaged with the class and staying on task will help you score very high in those two categories.

**Post-Program Survey:** The link to the Post-Program Survey is located in the Post-Program Survey Module on Canvas. The Post-Program Survey is to be completed immediately after you finish the Final Exam. You must provide a personal email address and your proper date of birth. If you complete the survey, you will receive full credit for the assignment. If you do not complete the survey, you will not receive credit for this assignment. There is no partial credit.

**Learning Exercises:** The content in this course will be delivered through Learning Exercises on Canvas. Each Learning Exercise contains a minimum of one video and a supporting problem. You will have three attempts to complete each Learning Exercise. Your highest score will be recorded.

**Homework:** You will master your understanding of the material through the Sapling Learning Homework assignments. You will have unlimited attempts to complete each Homework assignment. However, you will receive a 5% penalty for every incorrect attempt per question.

**Exams:** Four examinations will be given throughout the semester; the exam dates will be set by the local high school instructor. Each of the exams will be 15 questions of a variety of formats. All scores on exams will be administered via Canvas.

**Final Exam:** The final exam is a mandatory, comprehensive exam. This means that all the material covered during the course will be on the exam.

**Grade Breaks:** Course grades will be determined according to the following scale. Your score is calculated to the nearest 1/100th. There will be no curve in this course.

A	93.0	C	73.0
A-	90.0	C-	70.0
B+	87.0	D+	67.0
B	83.0	D	63.0
B-	80.0	D-	60.0
C+	77.0	F	0

## Additional Classroom Policies

**Work Outside the Class:** We will be using Sapling and Canvas for online learning and assessment. There are two types of graded assignments: Quizzes and Homework. Quizzes will be on Canvas and they are designed to introduce new concepts and/or direct teach basic skills outside of class. Homework Sets will be from Sapling and they are a series of problems that you should work through to help you solidify your conceptual understanding of the material and to develop more sophisticated problem-solving skills. Each type of assignment has been designed for a particular purpose to help you master the learning outcomes for this course. To this end, each assignment should be completed in the order in which it was assigned. Quizzes will be much shorter than the homework assignments. The graded quizzes and homework will be counted toward your overall grade at 5% each. Each quiz can be repeated up to three times. Your highest score will be counted toward your grade.

**More about the Exams:** Be sure and bring your *approved* calculator to the exam. We cannot provide calculators. You CANNOT use your cell phone or any other device as your calculator. You CANNOT make-up a missed exam for ANY REASON WHATSOEVER. You get to drop one exam score from your overall average, so for whatever reason you miss, that particular exam score (a zero) will be your dropped exam.

**More About the Final Exam:** I will not allow you to take the final early, late, or with another section. A final exam cannot be made-up in any way. Final exam times are scheduled by the registrar's office and cannot be changed for any reason. Show up at the right place and the right time or get a zero on the exam. The final exam WILL be comprehensive. This means that all the material covered during the course will be on the exam. The final exam will be counted as *no less than 25%* of your overall grade (could be more if you make higher than other scores). If you keep up with the material for the semester, the final will not be any more difficult than the four exams. It will be extremely difficult if you try to cram for it one day ahead. Keep up and make the grade.

**Cheating:** If you get caught cheating in any way, whatsoever, you will have to discuss the situation with me. I will arrive at a penalty and write up a formal report. The minimum penalty for cheating is receiving a zero on the assignment on which you cheated. In this class, in addition to all the traditional types of cheating (looking at someone else's answer, utilizing "cheat sheets" of any form or fashion – paper or digitized, getting an advance copy of an exam or quiz), I also consider allowing someone else to enter answers in class with your phone or tablet cheating. For example, if you send your iPhone to class with another classmate or an individual who is not you and you are caught, you and your accomplice will be penalized. If you deny the allegation, I will proceed by filing a formal report to the Judicial Services in the Dean of Students Office as is policy. Judicial Services would decide the final penalty after a hearing on the matter. For more information, read in the General Information Catalog about scholastic dishonesty (i.e. cheating).

**Students with Disabilities:** Please notify me of any modification/adaptation you may require to accommodate a disability-related need. You will be requested to provide documentation to the Dean of Students' Office, in order that the most appropriate accommodations can be determined. Specialized services are available on campus through Services for Students with Disabilities. The official wording is this: The University of Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY or Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, [www.utexas.edu/diversity/ddce/ssd](http://www.utexas.edu/diversity/ddce/ssd)

**Observance of Religious Holidays:** Religious holy days sometimes conflict with class and examination schedules. It is the policy of The University of Texas at Austin that the student must notify each instructor at least **fourteen days** prior to the classes scheduled on dates he or she will be absent to observe a religious holy day. For religious holidays that fall within the first two weeks of the semester, the notice should be given on the first day of the semester. The student may not be penalized for these excused absences but the instructor may appropriately respond if the student fails to complete satisfactorily the missed assignment or examination within a reasonable time after the excused absence.

**Does this course carry a FLAG?** This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

## Core Curriculum Requirements & Objectives

This course addresses the following four core objectives established by the Texas Higher Education Coordinating Board: communication skills, critical thinking skills, teamwork, and empirical and quantitative skills.

**Communication Skills:** Students will work in class, on homework and on exams to apply scientific model to explain empirical data as well as to use models to predict physical and chemical change. Students will be able to connect mathematical formulas and graphical representations to communicate scientific concepts.

**Critical Thinking:** Students are presented with many opportunities to use critical thinking skills to solve problems both in class via clicker response system and on graded homework assignments. These skills are assessed on the exams.

**Teamwork:** Students work in small groups in class on guided group activities designed to help the student come to a deeper understanding of the content and to "discover" chemical principles via the process of inquiry. Outside of class students are encouraged to continue working in groups on better understand homework assignments.

**Quantitative Skills:** Students are required to calculate answers based on their understanding of scientific laws and derived equations. These methods include skills in manipulating units, understanding and applying the concept of ratios, proportionality, rearranging algebraically to solve for a specified unknown, understanding and applying rates of change, interpreting equations using physical models. These skills are assessed on the exams.