

## Introductory Chemistry, Chemistry 1010, Fall 2019

### Section LO1

Dr. Melissa Kofoed, ML 289, 797-0217, [melissa.kofoed@usu.edu](mailto:melissa.kofoed@usu.edu)

<b>Office Hours:</b>	M/W: 1:30-3:20pm (calendly.com/kofoed, or by appointment (Online via Webex: usu.webex.com/meet/melissa.kofoed)
<b>Text:</b>	Suchocki, J. <i>Conceptual Chemistry</i> , 5th edition.; Pearson Education, Inc. (ISBN: 978-1-269-21341-7). <b>Older editions (and/or the non-custom edition) are perfectly acceptable!</b> A basic scientific calculator is also required- no cell phone calculators allowed.
<b>Prerequisite</b>	No prerequisites.
<b>Course Description</b>	Chemistry 1010 is an introductory chemistry class designed for non-science majors focusing on chemistry conceptually. This class will provide a basic background of fundamental chemistry concepts as well as highlight the importance of chemistry in everyday applications.
<b>Course Communication</b>	Course announcements will be made via the class Canvas page. <b>You are responsible for checking Canvas at least once a day for new class announcements!</b> Please feel free to email me with questions. I try to maintain a 24-hour response time during the week and a 48-hour response time on weekends. Regular office hours will be held at the hours listed above using Webex. Please use the following link to reserve your appointment: calendly.com/kofoed You may also email me to set up an appointment outside of my normal office hours. For academic questions, you will most likely get a quicker response by posting your question on Piazza. The link to Piazza is located on the Canvas navigation list on the left. Piazza is a free, online system where students can ask and answer questions. Not only will I be able to answer your questions, but my TA's and other students will be able to offer answers as well. You also have the option to post anonymously on Piazza, although please be aware that as an instructor I will be able to see your identity. It is expected that your communication on Piazza will be respectful and considerate, no harassment of any kind will be tolerated. Piazza is not the forum to discuss personal information. If you have personal concerns, please email me directly.
<b>Canvas</b>	Canvas is the where course content, grades, and communication will reside for this course. <a href="http://canvas.usu.edu">http://canvas.usu.edu</a> Your <b>username</b> is your A#, and your <b>password</b> is your global password (the same one you use for Banner or Aggiemail). For Canvas, passwords, or any other computer-related technical support, contact the USU IT Service Desk via the contact information listed below. <ul style="list-style-type: none"><li>○ 435 797-4357 (797-HELP)</li><li>○ 877 878-8325</li><li>○ <a href="http://it.usu.edu">http://it.usu.edu</a></li><li>○ <a href="mailto:servicedesk@usu.edu">servicedesk@usu.edu</a></li></ul>
<b>Supplemental Instruction</b>	The undergraduate teaching fellow (UTF) for this course is: Jonas Johnson ( <a href="mailto:jonasmjohnson@gmail.com">jonasmjohnson@gmail.com</a> )

	More information will be provided about his office hours in Canvas.
<b>Course Navigation</b>	<p>The course is divided into 12 modules. For each module, you should download the provided lecture notes and read the appropriate chapter prior to watching the lecture videos. While watching the lecture videos, you should add your own annotations to the notes provided. After watching the lecture videos, you should work the appropriate homework problems and check your answers in the back of the book or by watching the homework solutions video.</p> <p>You are allowed to work ahead in this class. All of the quizzes are open at the beginning of the class and will remain open until the submission date for the exam. Recommended completion dates are assigned to the modules to help keep you on pace, however <b>ALL QUIZ AND EXAM DUE DATES ARE FIRM</b>. There will be a midterm exam after modules 3, 6, and 9, with a final exam after module 12.</p>
<b>Quizzes</b>	<p>There is one “pre-test” quiz, and 13 graded quizzes each worth 10 points. The pre-test is worth 10 points, should be completed without any outside resources and is based on completion only. The first graded quiz is on the introductory class information, while each of the remaining 12 pertain to a specific chapter/module. All quizzes will open on the first day of class (August 26<sup>th</sup>). The pre-test and the introductory quiz must be completed within the first two weeks of the course. Quizzes pertaining to each exam will be available anytime during the open window before the exam due date. For example, quizzes for modules 1-3 must be taken before Exam 1, quizzes for modules 4-6 before Exam 2, quizzes for modules 7-9 before Exam 3, and quizzes for modules 10-12 before the final. All of the lectures and homework should be completed for each module before the quizzes are taken. Quizzes have a 30 minute time limit and should be done individually, but are open note and open book. For each quiz you may have four attempts and your best score is the score that will be kept. The questions on each attempt will not be identical, although they will cover the same concepts. Even if you do well on your first attempt, I strongly encourage you to utilize all four attempts, as they will be good practice for your exams. As the quizzes are all available at the beginning of the semester, <b>late submissions for quizzes will not be accepted</b>. Please plan accordingly to avoid the potential issues that may occur with waiting until the due date to submit your quiz.</p>
<b>Midterm Exams</b>	<p>There will be a midterm exam after modules 3, 6, and 9 offered during specific testing windows as indicated in the course schedule. Each midterm exam will contain 33 questions worth 3 points each, plus one freebie point (100 points total per exam). <b>You will not be allowed to take the midterm exams after their due dates</b>. During the period from November 20<sup>th</sup>-December 5<sup>th</sup> an optional comprehensive make-up exam will be offered. If you elect to take this exam and do better than one of your three midterms, this score will replace your lowest midterm score. If you do worse, this score will not be counted. The make-up exam is not allowed to replace your final exam score. <b>Exams must be taken at a proctored location or by using the Proctorio browser extension. For more information please visit <a href="http://testing.usu.edu">testing.usu.edu</a>.</b></p>
<b>Missed Exam Policy</b>	<p>Students will only be granted a make-up exam for a missed exam if the absence is excused under university policy. Examples of excused absences include (1) university sponsored participation in an event or activity- only if the instructor is notified in advance, (2) documented serious illness that is verified by a doctor’s note and (3) family emergency when documented by the student’s academic advisor. Please note that scheduled vacations, weddings, etc, are not considered excused absences under university policy.</p>
<b>Final Exam</b>	<p>A final exam (60 questions) worth 200 points must be taken by December 13<sup>th</sup> and must be taken at a proctored location or by using the Proctorio browser extension. The final exam</p>

	will contain approximately 50% material from Modules 1-9, and 50% material from Modules 10-12.																					
<b>Coursework and Grading</b>	Your grade will be based on the percentage of points earned from the following coursework:																					
	<table border="1"> <tr> <td>Weekly Online Quizzes (Best 12 of 14, @ 10 points/each)</td> <td>120 points</td> </tr> <tr> <td>Midterm Exam (3 @ 100 points/each) *Optional Make-Up Exam (1 @ 100 points, allowed to replace lowest midterm exam score)</td> <td>300 points</td> </tr> <tr> <td>Final Exam</td> <td>200 points</td> </tr> <tr> <td><b>Total</b></td> <td><b>620 points</b></td> </tr> </table>	Weekly Online Quizzes (Best 12 of 14, @ 10 points/each)	120 points	Midterm Exam (3 @ 100 points/each) *Optional Make-Up Exam (1 @ 100 points, allowed to replace lowest midterm exam score)	300 points	Final Exam	200 points	<b>Total</b>	<b>620 points</b>													
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In terms of final assignment of grades, you are <i>guaranteed</i> the following grades if your final class percentage lies within the indicated ranges:																						
<table border="1"> <thead> <tr> <th>Grade</th> <th>Range</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>100 % to 92.0%</td> </tr> <tr> <td>A-</td> <td>&lt; 92.0 % to 88.0%</td> </tr> <tr> <td>B+</td> <td>&lt; 88.0 % to 85.0%</td> </tr> <tr> <td>B</td> <td>&lt; 85.0 % to 81.0%</td> </tr> <tr> <td>B-</td> <td>&lt; 81.0 % to 77.0%</td> </tr> <tr> <td>C+</td> <td>&lt; 77.0 % to 73.0%</td> </tr> <tr> <td>C</td> <td>&lt; 73.0 % to 64.0%</td> </tr> <tr> <td>C-</td> <td>&lt; 64.0 % to 60.0%</td> </tr> <tr> <td>D+</td> <td>&lt; 60.0 % to 57.0%</td> </tr> <tr> <td>D</td> <td>&lt; 57.0 % to 50.0%</td> </tr> </tbody> </table>	Grade	Range	A	100 % to 92.0%	A-	< 92.0 % to 88.0%	B+	< 88.0 % to 85.0%	B	< 85.0 % to 81.0%	B-	< 81.0 % to 77.0%	C+	< 77.0 % to 73.0%	C	< 73.0 % to 64.0%	C-	< 64.0 % to 60.0%	D+	< 60.0 % to 57.0%	D	< 57.0 % to 50.0%
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<b>Grades will not be rounded. A final grade of a 91.9% would earn an A-, while a 92.0% would earn an A.</b>																						

**Suggested Course Schedule**

This course is semi self-paced in that you can work ahead, although **ALL QUIZ AND TEST DUE DATES ARE FIRM, LATE SUBMISSIONS WILL NOT BE ACCEPTED!** (Quiz and test due dates can be found on the assignments page or within the modules on Canvas.)  
Below are suggested dates for finishing the lectures and homework within each module. Finishing the modules by the due dates below should give you enough time to prepare for quizzes and tests and to get additional help if needed.

	<b>Suggested Module Completion Dates</b>
Module 1 (Chapter 1)	Sept 1 <sup>st</sup>
Module 2 (Chapter 2)	Sept 8 <sup>th</sup>
Module 3 (Chapter 3)	Sept 17 <sup>th</sup>
Module 4 (Chapter 4)	Sept 26 <sup>th</sup>
Module 5 (Chapter 5)	Oct 1 <sup>st</sup>
Module 6 (Chapter 6)	Oct 8 <sup>th</sup>
Module 7 (Chapter 7)	Oct 22 <sup>nd</sup>
Module 8 (Chapter 9)	Oct 29 <sup>th</sup>
Module 9 (Chapter 10)	Nov 10 <sup>th</sup>
Module 10 (Chapter 11)	Nov 14 <sup>th</sup>
Module 11 (Chapter 12)	Nov 28 <sup>th</sup>
Module 12 (Chapter 13)	Dec 6 <sup>th</sup>

**Each exam and the associated quizzes must be completed by the final date of the availability window as listed below. Note that the final exam must be taken during USU finals week (Monday December 9<sup>th</sup>-Friday December 13<sup>th</sup>).**

	<b>Exam Availability Windows</b>
Exam 1	September 18 <sup>th</sup> -September 24 <sup>th</sup>
Exam 2	October 10 <sup>th</sup> - October 16 <sup>th</sup>
Exam 3	November 6 <sup>th</sup> - November 12 <sup>th</sup>
Final Exam (50% Modules 1-9, 50% Modules 10-12)	December 9 <sup>th</sup> -December 13 <sup>th</sup>

### IDEA Objectives

1. Gaining factual knowledge (terminology, classifications, methods, trends).
2. Learning fundamental principles, generalizations or theories.
3. Learning to Apply Course Material (to improve thinking, problem solving and decisions).

### Course Objectives

(Aligned to IDEA objectives in parentheses.)

By the end of this course, you will be able to:

- Explain the nature of science. (2)
- Identify examples of applied research. (1).
- Identify physical quantities and use appropriate units. (1)
- Use metric prefixes and conversion factors to convert from one set of units to another. (3)
- Describe the particulate nature of matter. (2)
- Distinguish between mass, weight and volume. (1)
- Calculate density. (3)
- Distinguish between potential and kinetic energy. (1)
- Relate how the phase of a material depends on the motion of its particles. (2)
- Demonstrate how the phase of a material depends on the motion of its particles. (2)
- Demonstrate a conceptual understanding of gas laws. (2)
- Differentiate between physical and chemical properties. (1)
- Distinguish between physical and chemical changes. (1)
- Distinguish between an element and a compound. (1)
- Determine the number of atoms of each element in a compound. (1)
- Name and determine formulas for chemical compounds. (1)
- Identify whether something is a mixture or a pure substance. (1)
- Describe historical models of the atom. (2)
- Explain the experiments that led to the discovery of the electron and proton. (1)
- Describe the composition of the atomic nucleus. (1)
- Determine the number of protons, electrons and neutrons in an atom of a given element. (1)
- Explain the nature of electromagnetic radiation. (2)
- Explain the quantum model of the electron. (2)
- Diagram the electron configuration for an atom of a given element. (1)
- Explain the arrangement of the periodic table based on electron configuration. (3)
- Explain periodic table trends- ionization energy and atomic radius. (3)
- Identify three major products of radioactivity- alpha, beta and gamma. (1)
- Identify units of radiation and everyday uses of radioisotopes. (3)
- Predict the products of transmutation of a given isotope. (2)
- Perform calculations using the half-life of a radioisotope. (1)
- Describe and differentiate between fission and fusion. (1)
- Explain the relationship between mass and energy. (2)
- Draw electron dot structures and identify paired and unpaired electrons. (1)
- Use the periodic table to predict the type of ion an atom will form. (3)
- Predict formulas for ionic compounds. (3)
- Describe metallic bonding. (1)
- Use the octet rule to describe how atoms combine to form covalent bonds. (2)
- Predict the molecular geometry of small covalent molecules. (1)
- Differentiate between ionic, polar covalent and nonpolar covalent bonds. (1)
- Explain the role of intermolecular forces in determining the physical properties of a material. (3)
- Describe saturated and unsaturated solutions on a molecular level. (2)
- Identify the components of a solution. (1)

- Calculate the concentration of a solution in molarity. (3)
- Describe the effect of temperature on the solubility of a solute. (2)
- Describe the mechanism of how detergents clean. (3)
- Describe how ions can be removed from hard water. (3)
- Describe how water can be purified. (3)
- Balance a chemical reaction. (1)
- Convert between moles, grams and atoms/molecules of a given substance. (3)
- Use stoichiometry to relate the amounts of reactants to products. (3)
- Calculate the amount of energy released or absorbed by a chemical reaction using bond enthalpies. (3)
- Explain the difference between endothermic and exothermic chemical reactions. (1)
- Describe the requirements that must be met in order for a chemical reaction to occur. (2)
- Describe a real-life example of a catalyst in the destruction of stratospheric ozone. (3)
- Identify acids and bases. (1)
- Describe how the strength of an acid or base relates to the number of ions in solution. (1)
- Calculate the pH of a solution. (3)
- Describe the chemical nature of a buffer and how the addition of a buffer allows a solution to resist a change in pH. (3)
- Identify sources of acid rain and explain the environmental impact of these compounds. (3)
- Describe the impact of atmospheric carbon dioxide on the pH of ocean water. (3)
- Assign oxidation numbers to lone elements or elements in a compound. (1)
- Identify when a chemical undergoes oxidation or reduction. (1)
- Describe the relationship between oxidation and reduction and the generation of electricity in a fuel cell. (2)
- Describe examples of electrolysis. (1)
- Compare and contrast the processes of corrosion and combustion. (3)
- Identify the structures of saturated and unsaturated hydrocarbons. (1)
- Identify the functional groups in alcohols, phenols, ethers, esters, amines, amides, aldehydes, ketones, carboxyls, and carbonyls. (1)
- Describe how polymers are synthesized from monomers and the application of this process in the production of plastics. (3)
- Identify the basic components of a cell and the four major classes of biomolecules. (1)
- Recognize the molecular structures of simple and complex carbohydrates. (1)
- Compare and contrast the properties of fats and steroids. (1)
- Classify the structure of a protein based upon the organization of its amino acids and describe how enzymes work. (3)
- Identify nucleic acids as polymers of nucleotides and describe how they code for the building of proteins. (2)
- Distinguish vitamins from minerals and the roles they play in nutrition. (1)
- Classify metabolic reactions as either catabolic or anabolic. (1)

## University Policies & Procedures

### Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. [Faculty Code Policy #403](#) further defines academic freedom and professional responsibilities.

### Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

*"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."*

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize.

A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

### Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating:** using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
  - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
  - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
  - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
  - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
  - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
  - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.

- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

For additional information go to: [ARTICLE VI. University Regulations Regarding Academic Integrity](#)

### **Sexual Harassment/Title IX**

Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and [USU Policy 339](#) address sexual harassment in the workplace and academic setting.

The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU's [Affirmative Action/Equal Opportunity \(AA/EO\) Office](#) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment ([USU Policy 305](#)), and has designated the AA/EO Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

### **Withdrawal Policy and "I" Grade Policy**

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

### **Students with Disabilities**

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the [Disability Resource Center \(DRC\)](#) as early in the semester as possible (University Inn # 101, (435) 797-2444, [drc@usu.edu](mailto:drc@usu.edu)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

### **Diversity Statement**

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Division of Student Affairs: <https://studentaffairs.usu.edu>, (435) 797-1712, [studentservices@usu.edu](mailto:studentservices@usu.edu), TSC 220
- Student Legal Services: <https://ususa.usu.edu/student-association/student-advocacy/legal-services>, (435) 797-2912, TSC 326,



- Access and Diversity: <http://accesscenter.usu.edu>, (435) 797-1728, [access@usu.edu](mailto:access@usu.edu); TSC 315
- Multicultural Programs: <http://accesscenter.usu.edu/multiculture>, (435) 797-1728, TSC 315
- LGBTQA Programs: <http://accesscenter.usu.edu/lgbtqa>, (435) 797-1728, TSC 3145
- Provost's Office Diversity Resources: <https://www.usu.edu/provost/diversity>, (435) 797-8176

You can learn about your student rights by visiting:  
The Code of Policies and Procedures for Students at Utah State  
University: <https://studentconduct.usu.edu/studentcode>

### **Grievance Process**

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: [Article VII](#).

### **Emergency Procedures**

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.