

# Chemistry 10, Spring 2019 Course Syllabus

## Reedley College, SCCCD

### Course Info:

Course #: 59127 – Lecture M/W/F 11-11:50am in PHY 82; Lab F 8-10:50am in PHY-82

### Instructor and Contact Information:

Instructor: Kurtis Thiesen  
Office: ANX 5 (Faculty Annex)  
Office Hours: Mon 1-1:50pm (LRC 111) and 2-2:50pm (virtual – email)  
Tues 10-10:50am (ANX 5)  
Wed 12-12:50pm (LRC 111)  
Thurs 10-10:50am (ANX 5)  
Phone: (559) 638-0300 ext. 3124  
E-mail: kurtis.thiesen@reedleycollege.edu

### Advisories

English 1A and Math 3A

### Required Items

**Textbook:** Introductory Chemistry by Nivaldo J. Tro, 6th ed. is the official textbook for the course, but please note that other editions of this Introductory Chemistry textbook (3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> by Tro) will suffice for CHEM 3A as course content is very similar from version-to-version.

**Homework:** Suggested homework problems for each chapter will be given. Mastery of these problems is vital to your success in this course.

**Lab Text:** Laboratory experiments will be uploaded to Canvas in pdf format; you must print these experiments out and bring them with you to class.

**Scientific calculator:** Any scientific calculator is acceptable, but graphing/programmable calculators and cell phone calculators are NOT allowed during exams and quizzes.

**Safety Goggles & Lab coat:** You will not be allowed to participate in lab experiments without your safety goggles and a lab coat. Approved safety goggles and lab coats are available for purchase in the bookstore. Gloves will be provided.

**Scantron Form:** #882-E, you'll need one of these for each lecture exam we take in class.

### Course Description

This is a one-semester elementary class for students who have never taken high school chemistry. The course will give students a basic background in matter, energy, chemical reactions, measurements, formula writing, nomenclature, chemical calculations, gas laws, bonding, solutions, net ionic equations, acid-base theory, pH, oxidation-reduction reactions and equilibrium. This course is recommended for applied science and non-science majors or for students preparing to take Chemistry 1A.

### **Additional Resources:**

Free tutoring is available in the Tutorial Center (Library, Room LRC 111). The link to the RC Tutorial Center is as follows: <http://www.reedleycollege.edu/index.aspx?page=128>

### **Important Dates:**

Friday (2/1) - Last day to drop in order to avoid a "W"

Friday (3/15) - Last day to drop with a "W" (a letter grade will be assigned after this date)

**Additional policies related to adding this course: If a student hopes to add this course, he/she must attend all lecture and lab periods, otherwise he/she will lose their spot on the list of students who are hoping to add the course. Also, if a student is issued an add code, the code must be used within 48 hours; if the code is not used promptly, an alternative add code will be given to the next student on the waiting list, and the original code will cease to be valid (i.e. if the original student adds the course after 48 hours have passed, they will immediately be dropped).**

## **Course Policies:**

### Lecture Attendance:

- Lecture attendance is mandatory; attendance will be recorded for lecture and lab. You are responsible for the material that you miss if you are absent from lecture or lab.
- Any student who is not present at the start of the first class period may be dropped and their spot given to another student.
- **Important Note: If a student misses more than 25% (combined) of lectures/labs they will be dropped.**

### Lab Attendance:

- In order to be counted as present for a lab you must arrive on time, participate in the experiment or activity, and, unless otherwise instructed, stay the entire lab period. In other words, if you arrive late, leave early, or do not participate in lab activities, you may be counted absent and given a zero on your lab exercise.  
Note: Showing up late for lab is a safety risk for you and others, as specific safety concerns are generally addressed at the beginning of lab.
- **Important Note: If a student misses more than 3 laboratory sessions they will be dropped from the course (if these absences occur before the final “drop” deadline), or receive a failing grade in the course (if their 3<sup>rd</sup> absence occurs after the final “drop” deadline etc.).**

### Canvas:

- Canvas will be used extensively in this course, and students will be expected to check Canvas regularly for updates; lecture PowerPoints and other important documents (for both lecture and lab) will be uploaded to Canvas regularly.

### Reading:

- Listed on the course schedule is the associated reading for each chapter. The course expectation is that you will have completed the readings before coming to class on the days those topics are discussed etc.

### Missed exams, quizzes and labs:

- Make-up exams and quizzes are generally not given (exceptions are very unlikely), and as such, a missed exam will result in a score of “0” on the exam etc.
- Official RC Policy concerning absences - “There are no institutionally approved excused absences for any reason. Only your instructor may excuse an absence. Absences caused by personal engagements, transportation delays and business affairs will not be excused, nor will absences from class to complete registration or add/drop activities...Makeup work must be completed to the satisfaction of the instructor of the course. Being excused from class does not relieve the student from the responsibility for completing all assignments.”

### Cheating:

- Cheating is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another’s work, supplying one’s work to another, giving or receiving copies of examinations without an instructor’s permission, using or displaying notes or devices inappropriate to the conditions of an examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely.
- You are encouraged to work together on labs. However, ***your individual work must be evident***. Do not copy work or allow others to copy from your work. Instances of confirmed cheating will generally result in failure and be referred to the Dean for further action.
- Electronic devices such as cell phones, tablets, etc. are not allowed during exams and must be put away in a backpack or purse; confirmed use of these devices constitutes cheating.
- As an alternative to automatic failure in the course, at the instructor’s discretion, you may instead be assigned negative credit for the amount of points possible on the assignment. In this instance, the score would not be allowed to be dropped as your lowest score.
- RC Academic Dishonesty Statement: *“Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.”*

### Plagiarism:

- Plagiarism is a specific form of cheating: the use of another's words or ideas without identifying them as such or giving credit to the source. One of the most common forms of this is copying information from a website and pasting it into your document. Instances of plagiarism will be treated like any other form of cheating.

### Laboratory Safety:

- On the first day of lab we will cover various safety rules. If you do not follow these rules you will be asked to leave, and you may be dropped from the course. For example, if you refuse to wear safety glasses, you would be immediately and permanently removed from the course for your own protection and those around you.

### Disabled Students:

- It is our policy not to discriminate against any student. If you suspect that you have any type of physical disability or learning disability that is relevant to your performance in the course, I'll encourage you to come talk to me about it right away (though you're not required to) so that I can support you to the best of my ability. Additionally, it may be helpful for you to stop by the disabled student services office and talk with staff members there to determine what kinds of services and support are available to you to help you succeed in this and other courses. SCCCD policy: *If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the Disabled Student Services as soon as possible.*

### Electronic Devices:

- Use of electronic devices (laptop, tablet, etc.) in the classroom is acceptable as long as it is not a distraction to the instructor or to other students. In lab, they must also be used in such a way as to not cause a safety risk (e.g. do not handle chemicals and then use your computer without removing your gloves and/or washing your hands). Electronic devices of any kind are NEVER permitted during exams.

### Classroom Visitors:

- In accordance with Reedley College policy, only students currently enrolled in the course will be allowed in the classroom during lab and lecture.

**Grading:** Your course grade will be calculated as follows:

Lab Reports	15%
Lab Quizzes	10%
Exams	48% (4 unit exams worth 12% each)
Final exam	17%
Homework	10% (possibility for 5% XC)

### **\*Grading Scale:**

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

\*The instructor reserves the right to alter grade ranges to accommodate borderline grades.

**Lab Reports:** Expectations about lab reports will be discussed during the introduction to lab policy and safety on the first day of lab.

**Lab Quizzes:** There will be 3 lab quizzes during the term that are meant to examine whether you've gained a thorough understanding of relevant lab theory, the techniques associated with lab experimentation, and, where appropriate, how these lab experiments are related to lecture topics.

### **Exams:**

There will be 4 unit exams that are weighted equally and a final exam which is weighted more heavily; these exams may be multiple choice, essay, short answer, or a mixture of these. The score on your lowest unit exam

may be replaced by your final exam score if your final exam score exceeds it (and if you miss an exam, this will automatically count as your lowest unit exam score). Though each unit exam will be written primarily to examine topics in the current unit/recent chapters, topics in chemistry build upon one another and so all exams should be considered comprehensive. Make up exams will be given only in exceptional circumstances and only by prior arrangement with the instructor.

**Homework:** Before we begin a new chapter, I will post suggested HW problems; it is HIGHLY recommended that you complete these practice problems in order to prepare yourself for the exams, and in order to receive HW credit (see grading scheme above). HW will be collected before each exam (e.g. Exam #1 will cover chapters 1-4, and the corresponding HW for these chapters will be collected on the day of the exam); there will be 4 HW collections (before each of the 4 unit exams), making each HW collection worth 2.5% of your overall grade. Grading of these HW assignments is qualitative, and will be discussed on the first day of class. It is possible to receive an additional 5% (1.25% per HW collection) added to your overall course total. This extra credit opportunity will be discussed on the first day of class.

### **Student Learning Outcomes for CHEM 10:**

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

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

- ✓ Apply basic safety procedures in the chemical laboratory and demonstrate laboratory skills in the use of analytical balances, following experimental procedures and the proper handling of glassware.
- ✓ Apply the definition of acids and bases and explain the concept of pH.
- ✓ Demonstrate a working knowledge of the periodic table in such ways as deriving inorganic chemical formulas and balanced chemical equations.
- ✓ Use dimensional analysis and stoichiometry to solve for an unknown parameter of density, volume, mass, pressure, temperature, molar mass and concentration.
- ✓ Write the name of inorganic and molecular compounds from the formulas.

### **Course Objectives for CHEM 10:**

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

- ✓ Apply the definition of acids and bases to the understanding of pH and acid related problems.
- ✓ Balance chemical equations, and use both the molecular and net ionic forms of the equation and stoichiometry to predict quantities of products from given reactant amounts.
- ✓ Complete mole and mass calculations using the stoichiometry in balanced equations.
- ✓ Demonstrate safe use of the laboratory equipment, such as an analytical balance, glassware and thermometers, while conducting laboratory experiments.
- ✓ Demonstrate the use of the ideal gas law and combined gas law to calculate quantities for all the variables in an equation, such as pressure, volume, moles and temperature.
- ✓ Describe covalently bonded compounds using Lewis structures.
- ✓ Identify molecular and ionic compounds and the specific bonding types that occur in these compounds.
- ✓ Identify molecular and ionic compounds.
- ✓ Identify the names and symbols of the elements on the periodic table and use these to derive inorganic chemical formulas and balanced chemical equations.
- ✓ Set up and balance chemical equations.
- ✓ Use dimensional analysis to convert from the English to the metric system for measurements that are common to chemistry such as mass, volume, formula weights, density, linear measurements and temperature.
- ✓ Use the periodic table to predict properties of the elements and to obtain information for chemical calculations.
- ✓ Write the names of ionic and molecular compounds given the chemical formula.

## Tentative Schedule:

Week	Date	Lecture topics	Lab experiment
1	1/14	M Syllabus, Introduction to CHEM 10	
1	1/16	W Ch 1: The Chemical World	
1	1/18	F Ch 2: Measurements, scientific notation, and significant figures	Lab policies, safety, lab equipment, check into lockers
2	1/21	<b>M Martin Luther King, Jr. Day</b>	
2	1/23	W Ch 2: Dimensional Analysis, density	Exp. 3 – Density of Liquids and Solids
2	1/25	F Ch 3: Matter, physical and chemical changes, energy	
3	1/28	M Ch 4: Atoms, elements, ions	
3	1/30	W Ch 4: Valence electrons, isotopes	Exp. 1 – Properties and Changes of Matter
3	2/1	F Ch 5: Chemical formulas, nomenclature (ionic compounds)	
4	2/4	M Ch 5: Nomenclature (molecules)	
4	2/6	W Catch up on topics or get ahead	Worksheet - Nomenclature
4	2/8	F <b>Exam #1 (Chapters 1-4)</b>	
5	2/11	M Ch 6: The mole, percent composition, hydrates	
5	2/13	W Ch 6: Empirical Formulas	<b>No lab (Friday) – Lincoln Day</b>
5	2/15	<b>F Lincoln Day (No Class)</b>	
6	2/18	<b>M Washington Day (No Class)</b>	
6	2/20	W Ch 7: Balancing chemical equations	Exp. 6 – Percentage of Oxygen in Potassium Chlorate
6	2/22	F Ch 7: Reaction types + writing chemical equations	
7	2/25	M Ch 7: Net ionic equations	
7	2/27	W Ch 8: Stoichiometry	<b>Lab Quiz 1 (labs 3, 1, nomenclature, safety/lab equipment)</b>
7	3/1	F Ch 8: Limiting reactant, theoretical yield	
8	3/4	M Ch 8: Percent yield	
8	3/6	W Ch 8: Enthalpy	Exp 5 – Empirical Formulas of a Compound
8	3/8	F Ch 9: Electron configuration	
9	3/11	M Ch 9: Periodic trends	
9	3/13	W Catch up on topics or get ahead	Exp 13 – Percent water in hydrates
9	3/15	F <b>Exam #2 (Chapters 5-8)</b>	
10	3/18	M Ch 10: Bonding and Lewis structures	
10	3/20	W Ch 10: Molecular geometry	Exp 8 – Alum production from scrap aluminum
10	3/22	F Ch 10: Polarity	
11	3/25	M Ch 11: Gases and gas pressure	
11	3/27	W Ch 11: Gas laws	Worksheet – Lewis diagrams and molecular models
11	3/29	F Ch 11: Ideal gas law	
12	4/1	M Ch 12: Intermolecular forces (types)	
12	4/3	W Ch 12: Evaporation and condensation	<b>Lab Quiz 2 (labs 6, 5, 13, 8)</b>
12	4/5	F Ch 13: Solutions and molarity, dilutions	
13	4/8	M Ch 13: Solution stoichiometry	
13	4/10	W Catch up on topics or get ahead	Exp 4 – Relative masses of Zn and Cu
13	4/12	F <b>Exam #3 (Chapters 9-12)</b>	
	4/15	<b>M No Class – Spring Break</b>	
	4/17	<b>W No Class – Spring Break</b>	<b>No lab – Spring Break</b>
	4/19	<b>F No Class – Spring Break</b>	
14	4/22	M Ch 14: Acids and bases	
14	4/24	W Ch 14: Acids and bases	Exp 14 – Molar mass of a volatile Liquid
14	4/26	F Ch 14: Titrations	
15	4/29	M Ch 14: pH and pOH	
15	5/1	W Ch 15: Collision theory and reaction rate	Exp 9 – Production of hydrogen gas
15	5/3	F Ch 15: Equilibrium constants	
16	5/6	M Ch 15: Le Chatelier's principle	
16	5/8	W Ch 16: Oxidation and reduction (revisited)	Exp 11 – Acid base titration lab
16	5/10	F Ch 16: Activity series, batteries, corrosion	
17	5/13	M Catch up on topics or review	
17	5/15	W <b>Exam #4 (Chapters 13-16)</b>	<b>Lab Quiz 3 (Labs 4, 14, 9, 11 and Lewis diagrams) + check out</b>
17	5/17	F Review for final exam	
18	5/20	<b>M Final Exam (11am)</b>	<b>No lab during finals week</b>