

CHEM V20: Elementary Chemistry (CRN: 31921)

Spring 2020

Essential Course Information

Class Meetings: TTh 1:00pm-2:50pm in HSC-120

Course Units: 4.0 (1 hr 50 minutes of lecture twice + 8-12 hours outside of class per week)

Prerequisites: MATHV01 or MATHV01E or MATHV11B or 1 year of high school beginning algebra with a grade of C or better

Course Description: This course includes fundamental theories, laws, and techniques of general chemistry together with their more important applications, drill in chemical formulas, equations, and calculations.

Who should take this course? This course is designed as a foundational class for beginning or returning chemistry students. The purpose of this course is to prepare students for further classes in chemistry and other sciences as well as scientific fields with the core chemical knowledge necessary for physics, engineering, biology, medicine, materials science, and other areas. It is both challenging and demanding, so be prepared to give it your all and take advantage of the many resources available to help you succeed!

About the Instructor

Instructor: Malia Rose-Seisa (preferred: Malia or Professor Rose)

E-mail/iMessage: mrose1@vcccd.edu (preferred, will usually reply within 24 hours)

When e-mailing/texting: please include your name and what class. Be as specific as possible about your question (screenshots or photos are great!)

Phone: (805) 289.6242 (voicemail); **Office:** SCI-330 (third floor facing the parking lot)

Office Hours: MW 2-2:30pm in SCI-216, TWTh 9-10am, W 1-2pm in STEM Harbor, 2-2:30pm in SCI-216
Please feel free to stop by my office at any time, even if it's not office hours, as I am more than happy to help whenever I can. If the door is closed, just knock; if I'm not there, I will be right back. Let me know if you wish to set up an appointment for additional help. Use me as a resource to help you with this course, whether it's the material, grading, policy, or other questions like majors, transferring, etc. I want to help!

Website: <http://mrosechemistry.weebly.com> (handouts/course information, also on Canvas)

Other Resources

STEM Harbor: In SCI-223. Visit for a schedule of drop-in hours.

Tutoring: In the Learning Resources Center (LRC), first floor of the library. Visit for a schedule of tutor hours, drop-in and by appointment

BEACH: Open, free computer and Internet access for students

Online: There are many resources online, including lecture videos on YouTube, practice worksheets from other courses, and even notes on the same topics we cover.

Course Materials

Required Materials:

Introductory Chemistry, any edition by Nivaldo Tro

Non-programmable scientific calculator (like TI-30X)

Sapling Product Key (<http://saplinglearning.com/ibiscms/login/>)

Two notebooks (lecture notes and homework)

Classroom Policy

Attendance: Each class we cover half to an entire chapter or more of material, including examples that resemble questions on your quizzes and exams, each class meeting so doing well in this course requires your initiative and involvement at all times. Attendance is mandatory and will be taken every class. School policy states that students missing two weeks' worth of class may be dropped to receive a W in the course. If an emergency keeps you from class, it is your responsibility to speak to me beforehand or as soon as possible to catch up on what you have missed. Absence is not a valid excuse for missing assignments and cannot be used to avoid late penalties or to make up quizzes or in-class activities.

Classroom Conduct: Always come to class prepared with your notebook, calculator, writing utensils, and full attention. Professional courtesy is required in the classroom at all times. This includes, but is not limited to, punctuality, turning off or to silent all electronic devices, refraining from talking or other disruptive behavior during class, and treating other classmates and myself with respect. If you are being distracting to yourself, me, and/or the students around you, you will be warned. If repeated, you will be asked to leave the class, points will be deducted, and the incident will be reported to the Behavioral Intervention Team. You made the effort to be in class; you should get the most out of it!

Academic Integrity: Cheating on or plagiarizing any assignment or examination is a serious breach of the Student Code of Conduct, is strictly prohibited, and will result in a zero for that assignment and a report sent to the Behavioral Intervention Team and Student Services. Cheating includes, but is not limited to, talking and using notes, references, or prohibited electronic devices during exams or quizzes or any other advantage not available to all students in the class. Plagiarism is copying homework assignments from online resources, tutors, or other students. Cheating, however minor or major, is always unacceptable no matter the circumstances.

Grading Policy

Grades: All assignments' grades will be posted on Canvas throughout the year so you can keep track of your current progress. This course is graded by point total, meaning that everyone begins at the same place and each point you earn no matter the assignment brings you closer to your desired grade. Your final letter grade will be assigned based on your final point total. **Final grades are final and will not be rounded.**

Grading Categories:

Homework (best 13 of 14)	10 pts each for a total of	130 pts
Notebook Checks (best 5 of 6)	5 pts each for a total of	25 pts
Activities	varying pts each for a total of	70 pts
Quizzes (best 10 of 11)	15 pts each for a total of	150 pts
Exams (best 5 of 6)	125 pts each for a total of	<u>625 pts</u>
	Total Possible Points	1000 pts

Points to Grade:	1000 to 900 points earns an	A
	899 to 800 points earns a	B
	799 to 700 points earns a	C
	699 to 600 points earns a	D
	599 to 0 points earns a	F

Extra Credit: Do not expect or ask for any extra credit in this course. Points can only be earned on scheduled assignments. If opportunities for extra points arise, they will be rare, small, and offered to the entire class during the semester at my discretion.

Assignments

Homework: Chemistry is a subject learned by doing, not just listening. Homework is your opportunity to put into practice what we discuss in class to make sure you understand it and to pinpoint the areas where you need help. Expect to spend 4-8 hours per week on the homework. Questions based on our lecture topics have been assigned to be answered on the Sapling website, available by the first class meeting and due at the beginning of class on the dates listed on the schedule. Late work can be turned in up to three calendar days past the original due date for a 10% penalty per day late (exception: HW# 14 is due on our final exam day and must be completed on time); any work done past three days late will receive an automatic zero. **Your lowest homework score will be dropped.** There is no makeup homework for any reason.

Homework is designed to help you study; take it seriously and work independently! These assignments are where your exam questions come from. All questions (except multiple choice or true/false) allow 5 attempts to answer correctly without penalty. A good rule of thumb is to always try to answer the problem on your own without help first. By the third or fourth attempt, ask for help. Working with tutors or other students on homework sets is both acceptable and encouraged but simply copying down answers from a classmate or online is plagiarism and will be subject to disciplinary measures and will hurt you when these questions appear on quizzes or exams. Past data has shown that students who complete their homework have a 96% likelihood of passing the course!

Notebook Checks: Being an empirical (verifiable by evidence) discipline, solutions always require proof to back up their claims. While working on your homework, keep clear, readable, and organized written records in a separate notebook and write down each step and/or calculation as you go. This will allow you and me to catch mistakes faster as well as to practice showing your work as you will be required to do for quizzes and exams. On each exam day at the start of class, I will collect your homework notebooks and assign points based on completion. Notebook checks must be on time; **no late credit will be given.**

Activities: Periodically in-class activities will be assigned, ranging from questions to solve to group work to outside research to encourage your participation and engagement in the class. These will not be announced ahead of time and will only be available to students physically present in the classroom that day. **No late or make-up credit will be given.** It is important that you do not miss any classes! These activities will vary in points based on the level of difficulty and effort involved.

Quizzes: Quizzes are an opportunity to review material, practice answering questions without outside help, and see what level of difficulty questions on the exam will look like before taking a full exam. A quiz will be given during the first 15 minutes of class on the dates listed on the schedule, which will not change. The questions will be taken from the material covered before the quiz and after the last assessment (quiz or exam) and be very similar to the questions seen on the homework assignments and as lecture examples. **There are no early or make-up quizzes** and tardy students will not be given extra time to complete it. **Your lowest quiz score will be dropped.** Always bring a calculator!

Exams: The largest portion of your course grade are your five exams as this represents your individual comprehension of the material covered. Exams will be given during the class period on the dates indicated on the schedule on two to three chapters' material. The questions will be a combination of homework and in-class examples as multiple choice, short answer, and/or calculations. The best way to study for these exams is *practice*; redo your homework, all lecture examples, and extra review questions from other sources. **Your lowest exam score will be dropped.** As a result, **no make-up exams will be offered for any reason.**

Always bring a calculator; sharing calculators or using phones is not allowed. You will also be allowed to bring a 3"x5" index card, front and back, handwritten or typed, to each exam with any information you desire or might think useful. You will be provided with a periodic table and some constants and equations (these will be announced in class). If you require alternative classroom or test accommodations, please contact me and the Educational Assistance Center at 654-6300 as soon as possible so that your needs may be met.

Final Exam: The sixth and last exam in this course will be taken during final exam week. It will include some new material covered that previous week while the majority will be cumulative review from material covered earlier in the semester. School policy dictates that it must be taken at the scheduled time during finals week; any conflicts with other final exams must be discussed with me beforehand. **Your final exam is Thursday, May 14th at 12:30-2:30pm.** Your final exam will be counted as one of your six course exams and, if it is your lowest score, can be dropped.

About the Class

Student Learning Outcomes: This course will prepare you to do the following "big picture" concepts:

- 1.) Solve quantitative chemistry problems using various mathematical procedures including dimensional analysis and algebraic equations and demonstrate clear reasoning in their work.
- 2.) Explain the basic structure of atoms and molecules and describe how atoms combine to form compounds.
- 3.) Describe how the structure of atoms and molecules leads to the macroscopic properties of a material such as reactivity, boiling point, melting point, and polarity.
- 4.) Analyze, predict, and represent chemical changes using knowledge of chemical formulas, solubility rules, periodic trends, stoichiometry, and chemical equations.

See http://www.venturacollege.edu/faculty_staff/academic_resources/core_competencies/index.shtml

Course Objectives: The specific concepts we will cover are:

- A. Apply the scientific method to chemistry data and problems, including developing hypotheses and hypothesis testing and evaluation.
- B. Solve problems using the correct number of significant figures and scientific notation.
- C. Solve problems involving the metric system and conversion of units between systems.
- D. State the symbols of common elements and the structure of simple molecules.
- E. Write formulas and state names of salts, acids, and molecular compounds.
- F. Formulate and balance simple chemical equations.
- G. Perform mole calculations, including limiting reactant stoichiometry problems.
- H. Solve problems involving ideal gases.
- I. Solve solution concentration problems involving molarity and percent concentration.
- J. Distinguish between elements, compounds, and mixtures.
- K. Arrange elements according to their properties by referring to the periodic table.
- L. Construct diagrams of the atomic structures of common elements and differentiate between the elementary particles that make up an atom.

A Final Note

This course is both demanding and difficult; chemistry is a very challenging subject and ChemV20 in particular covers a huge volume of material in a single semester. **Do not fall behind!** Every day is cumulative and builds upon the previous. Please never feel timid about asking for help; that really is the only way to do well. Use the many resources at your disposal between myself, your classmates, at VC, and online to help you master this rigorous but rewarding subject.

Important Dates to Remember

Jan. 17	Last day to drop with full refund
Jan. 24	Last day to drop without a "W"
Apr. 17	Last day to drop with a "W"
May 8-14	Final Exams

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Tuesdays and Thursdays, 1pm-2:50pm in HSC-120

Tentative schedule -- subject to change

Week	Day	Due	Section	Topic
1 (7-Jan)	T			Introduction, Syllabus
			1.1-3	The Scientific Method
(9-Jan)	Th		2.2/A	Operations & Calculator Usage
			2.3	Significant Figures
2 (14-Jan)	T		2.4	Sig. Figs. In Calculations
			2.5	The Metric System
(16-Jan)	Th	HW #1	2.6	Unit Conversions
		Quiz #1	2.6-9	Dimensional Analysis
3 (21-Jan)	T			(cont.)
			2.10	Derived Units/Density
(23-Jan)	Th	HW #2	3.2-6	Matter
		Quiz #2	3.8, 3.10	Energy and Temperature
4 (28-Jan)	T		3.9, 3.11-12	Heat
			4.2-6	Atomic Theory and the Periodic Table
(30-Jan)	Th	HW #3	Ch. 1-3	EXAM #1--Thursday, Jan. 30
5 (4-Feb)	T		4.7-8	Atomic Notation, Ions
			4.8-9	Isotopes and Atomic Weights
(6-Feb)	Th	HW #4	5.3-4	Types of Compounds
			5.5-7	Naming Ionic Compounds
6 (11-Feb)	T		5.7	(cont.)
			5.8-10	Naming Molecular Compounds
(13-Feb)	Th	Quiz #3	5.11	Formula Masses
			6.3	The Mole
7 (18-Feb)	T	HW #5	6.4-5	Mole Conversions
			6.6-7	Percent Composition
(20-Feb)	Th	Quiz #4	6.8-9	Empirical and Molecular Formulas
			7.2-4	Intro. to Chemical Reactions
8 (25-Feb)	T	HW #6	Ch.4-6	EXAM #2--Tuesday, Feb. 25
(27-Feb)	Th		7.5-7	Precipitation Reactions
			7.8	Acid-Base Neutralizations, Gas Evolution
9 (3-Mar)	T		7.9-10	Redox, Types of Reactions by Movement
			8.3-4	Stoichiometry
(5-Mar)	Th	HW #7		(cont.)
		Quiz #5		(cont.)
10 (10-Mar)	T		8.5	Limiting Reactant
			8.6-7	Percent Yield, Enthalpy
(12-Mar)	Th	HW #8	9.1-3	The Nature of Light
		Quiz #6	9.4-5	The Bohr Model of the Atom

Week	Day	Due	Chapter	Topics			
11 (17-Mar)	T		9.6	Quantum Numbers			
			9.7-9	Orbital Diagrams, Periodic Trends			
(19-Mar)	Th	Holiday--No Class					
12 (24-Mar)	T	HW #9	Ch. 7-9	EXAM #3--Tuesday, Mar. 24			
(26-Mar)	Th		10.2-3	Chemical Bonding, Lewis Theory			
			10.4-6	Drawing Lewis Structures			
13 (31-Mar)	T			(cont.)			
			10.7	VSEPR Theory			
(2-Apr)	Th	Quiz #7	10.8	Geometry and Polarity			
			11.2-3	Intro. To Gases, Pressure			
14 (7-Apr)	M-F	Spring Break--No Class					
15 (14-Apr)	T	HW #10	11.4-7	The Simple Gas Laws			
			11.8	The Ideal Gas Law			
(16-Apr)	Th	Quiz #8	11.8-10	Gases in Stoichiometry, Dalton's Law			
				(cont.)			
16 (21-Apr)	T	HW #11	Ch. 10-11	EXAM #4--Tuesday, Apr. 21			
(23-Apr)	Th		12.2-3, 6	Intermolecular Forces			
			12.4-5	Phase Changes			
16 (21-Apr)	T	HW #12		(cont.)			
			13.2-4	Solutions and Solubility			
(23-Apr)	Th	Quiz #9	13.5-8	Concentration			
			13.9	Colligative Properties			
17 (28-Apr)	T	HW #13	14.2-4, 7	Acids and Bases			
				(cont.)			
(30-Apr)	Th	Quiz #10	14.8	Ion Product Constant			
				(cont.)			
18 (5-May)	T	Ch. 12-14 EXAM #5--Tuesday, May 5					
(7-May)	Th	Quiz #11	14.9	The pH/pOH Scale			
				(cont.), Review			
FINAL EXAM: Tuesday, May 14th at 12:30PM-2:30PM							
Due: HW #14							