OneClass

Booster Classes

General Chemistry - CHEM1001
3 Credits
Syllabus and Schedule, Spring 2021 (Updated January 8, 2021)

Course Description:
In this introductory chemistry course students learn the fundamentals of chemistry through its applications in our everyday lives. Students will learn about geometric structure and bonding, as well as valence and molecular orbital theories. They learn to draw Lewis, condensed, and skeletal structures and relate the three-dimensional structure of molecules to their chemical and physical properties. Students will be introduced to a variety of functional groups that exhibit patterns of reactivity. They will learn about noncovalent interactions, acid–base chemistry, and how to predict reaction products in the context of thermodynamics, kinetics, and frontier molecular orbital theory; this allows them to hypothesize and understand how molecules all around us react in their respective environments. They will also learn how to think like scientists and be effective problem solvers—transferable skills to any future field of study

Course Instructor: Prof. Charlie Cox, PhD.

Prerequisites: High school general chemistry equivalent

Course Materials: This is an online course. All course materials such as video lectures, interactive texts, practice quizzes and exams are found on the General Chemistry 1 course website on oneclass.com.

Format of the Course:

- Students will need to watch short lecture videos for each skill which are paramount to succeeding in the course. Students will also have access to theories that reinforce and supplement the lecture videos, as well as exercises to test and cement their understanding of the concepts and serve to demonstrate their mastery of each skill.
- This course is delivered asynchronously - ie, students will be able to watch the videos at their own pace and convenience. Course progress is tracked through completion of skills - videos, theories, and the practice exercises.
- To successfully earn the credits, students must pass the midterm and final exams.

Course Grade:
There will be two exams - a mid term halfway through the course, and a final exam at the end of the course. The final exam is cumulative.

Mid-term exam counts for 40% of the overall course grade.
Final exam covers the entire course and counts for 60% of the overall course grade.

To pass this course and earn credits, students will need a 73% or C average as per the grade system at Becker College.

Course Policies:

1. Course Completion - To successfully complete the course, a student must complete all exams. All exams must be completed by their due dates for the student's specific cohort, as indicated. Failure to complete an assessment by the indicated due date will result in a grade of 0 for that assessment.
2. Students are expected to comply with the Academic integrity policy at Becker College
3. Transfer Credit – Credits earned in this course appear on an official Becker College transcript, and the course credits are likely to be eligible for transfer to other colleges and universities. Students are encouraged to contact potential colleges and universities in advance to ensure their credits would be accepted.

Important Dates:

	January Cohort	**February Cohort**	**March Cohort**	**April Cohort**	**May Cohort**
Cohort Start and End Dates	Jan 18, 2021 - Apr 9, 2021	Feb 15, 2021 - May 7, 2021	Mar 15, 2021 - Jun 4, 2021	Apr 12, 2021 - Jul 2, 2021	May 10, 2021 - Jul 30, 2021
Last Date to Register	Jan 31, 2021	Feb 28, 2021	Mar 28, 2021	April 25, 2021	May 23, 2021
Last Date to complete Mid-term Exam	March 1, 2021	March 29, 2021	April 26, 2021	May 24, 2021	June 21, 2021
Last Date to complete Final Exam	April 9, 2021	May 7, 2021	June 4, 2021	July 2, 2021	July 30, 2021

Accommodation Request:

If you have a request for reasonable disability accommodations, contact Dr. Richard DeCapua, richard@oneclass.com. Please include specifics regarding the accommodation you are seeking. Additionally, if you have an Accommodations Letter from a school you are currently attending, you may send that as well. We are committed to ensuring that learners with accessibility needs have equal opportunity to succeed in our courses.

Recommended schedule

Week	Chapter	Skills
1	Matter and Measurement	Report measurement
		Classify matter
	Atoms, Elements, and Compounds	Apply laws to solve problems
		Identify the number of protons, neutrons, and electrons in atoms and ions
		Solve problems relating to isotopes
		Solve problems relating to Avogadro's number, moles, and mass
		Solve problems relating to empirical and molecular formulas
2	Atoms, Elements, and Compounds	Assign oxidation states
		Name compounds
	Chemical Reactions	Solve problems relating to stoichiometry
		Solve problems relating to limiting reactant
		Write net ionic equations
		Write equations for Redox reactions
3	Gases	Use a manometer to measure gas pressure
		Solve problems relating to simple gas laws
		Solve for problems relating to the ideal gas law
		Solve problems relating to Dalton's Law of Partial Pressures
		Solve problems relating to collecting a gas over water
4	Gases	Solve problems relating to kinetic-molecular theory
		Solve problems relating to Graham's Law
		Solve problems relating to real gases
	Midterm 1	Reading days/ revision
		Midterm 1: covers chapters 1-4
5	Thermochemistry	Solve problems relating to quantity of heat
		Solve problems relating to calorimetry
		Solve problems relating to pressure-volume work
		Solve problems relating to enthalpy and internal energy
		Solve problems relating to Hess' Law and standard enthalpies of formation
6	Electrons and the Periodic Table	Solve problems relating to electromagnetic radiation
		Solve problems relating to atomic spectra of hydrogen

		Solve problems relating to quantum mechanics
		Solve problems relating to quantum numbers
		Solve problems relating to electron configuration
		Solve problems relating to the periodic table and its trends
		Last date to complete midterm 1
7	Chemical Bonding	Draw Lewis structures
		Draw Lewis structures with exceptions to the octet rule
		Assess electronegativity differences and polarity of bonds
		Apply the VSEPR Theory
		Assess dipole moment, polarity, bond order, bond length, and bond energies
		Apply the Valence Bond Theory
8	Chemical Bonding	Apply Lewis, VSEPR, and Valence Bond Theory simultaneously
		Apply the Molecular Orbital Theory
9	Solids and Liquids	Assess problems relating to intermolecular forces
		Solve problems relating to vapor pressure and phase diagrams
		Solve problems relating to Coulomb's Law and properties of ionic compounds
		Solve problems relating to the Born-Haber Cycle
10	Final Exam	Reading days/revision
		Final Exam: covers chapters 1- 9
11	Buffer	
12	Buffer	**Last date to complete final exam**

Optional supplementary resources

- Chemistry; Zumdahl & DeCoste, 8th edition (2017)
- General Chemistry: Principles and Modern Applications; Petrucci, Harwood, Herring and Madura, 11th edition (2016)
- Chemistry: A Molecular Approach; Tro, 3rd edition (2013)