



ACES Academic Enrichment Center

2019 Summer Enrichment Course Syllabus

Course Name: Chemistry I

Instructor: Katie Springthorpe

Course Description

ACES Chemistry I is an introduction to what we and everything in the universe is made of. This course is designed to prepare students for AP Chemistry and to lay a foundation for other science courses, including AP Biology and AP Environmental Science. This course specifically covers atomic theory and structure, electron behavior, bonding, geometry, and chemical reactions. Students will have the opportunity to apply the concepts they learn from class through practice problems (both in class and homework) and quizzes.

Materials

Notebook/Pencil
Calculator

Textbook: OpenStax Chemistry Atoms First 2e

This textbook is available as a free download from openstax.org and is accompanied by student resources. It is based on an “atom-centric” approach, meaning that more difficult concepts are left until a strong understanding of the atom has been built.

Course Objectives and Student Competencies

- Understand the makeup of atoms, elements, and molecules
- Apply dimensional analysis to unit conversions
- Identify trends in the periodic table and use them to explain reactions
- Determine molecular geometry, types of bonding, and name of compounds
- Write balanced chemical reactions

Class Structure

Each class will begin with a review of the previous day’s material and the homework assignment. Students will then be given a short (~15-minute) quiz on the previous material. After the quiz, new material will be introduced using lectures, discussion, interactive activities, and practice problems. There will also be an essential question presented at the beginning of all new material that students should be able to answer by the end of class. On Fridays, the quiz will be replaced by an exam following an extended review session. The remaining time on Fridays will be dedicated to a topic of special interest to the students. To get the most out of the

course, students should read the indicated chapter before coming to class and note which topics are giving them the most trouble.

Tips for Success

- Ask questions!
- Do the reading before class and write down things you don't understand.
- Try all the practice problems and homework.
- Write down what each problem is asking you to find. It will make a complicated problem a lot simpler.
- Don't get caught up in details; try to look for broad patterns instead.
- Try explaining concepts out loud.

Schedule

Week 1

Date	Topics	Homework
6/17	Introduction to Chemistry; Dimensional Analysis (Chapter 1)	Problem Set #1
6/18	Atomic Theory (Chapter 2)	Problem Set #2
6/19	Electron Behavior (Chapter 3)	Problem Set #3
6/20	Bonding (Chapter 4.1-4.5)	Problem Set #4
6/21	Exam; Special Interest Topic	Mid-Course Evaluation

Week 2

Date	Topics	Homework
6/24	Geometry; Advanced Bonding (Chapters 4.6-Chapter 5.3)	Problem Set #5
6/25	Advanced Bonding (Chapter 5.4)	Problem Set #6
6/26	Chemical Formulas; Molarity; Balancing Reactions (Chapter 6-7.1)	Problem Set #7
6/27	Stoichiometry (Chapter 7.2-7.5)	Problem Set #8
6/28	Exam; Special Interest Topic; Wrap-Up	Course Evaluation