ACES Academic Enrichment Center

2019 Summer Enrichment Course Syllabus

Course Name: Chemistry II

Instructor: Katie Springthorpe

Course Description

ACES Chemistry II builds on the foundation laid in Chemistry I. This class tackles more "applied" problems, using many of the concepts from Chemistry I, and is more math-based than visualization-based. This class specifically covers states of matter, chemical equilibrium, thermodynamics, and kinetics. 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 downloaded 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 why gases, liquids, and solids have certain behaviors
- Determine if a reaction is at equilibrium
- Justify if a reaction is spontaneous using thermodynamics
- Calculate reaction rates
- Explain how chemists can change reaction rates and equilibria

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**
7/8	Gases (Chapter 8)	Problem Set #1
7/9	Liquid and Solid Chemistry (Chapter 10)	Problem Set #2
7/10	Solutions Chemistry (Chapter 11)	Problem Set #3
7/11	Thermochemistry (Chapter 9)	Problem Set #4
7/12	Exam; Special Interest Topic	Mid-Course Evaluation

Week 2

Date	**Topics**	**Homework**
7/15	Thermodynamics; Electrochemistry (Chapter 12; 16.1-16.4)	Problem Set #5
7/16	Equilibrium (Chapter 13)	Problem Set #6
7/17	Acid/Base Chemistry; Other Equilibria Cases (Chapters 14-15)	Problem Set #7
7/18	Kinetics (Chapter 17)	Problem Set #8
7/19	Exam; Special Interest Topic; Wrap-Up	Course Evaluation