Advanced Placement Chemistry
Chapters 17 – 18 Syllabus and Reverse Classroom Video Links

As you work through the chapter, you should be able to:

Chapter 17 – Spontaneity, Entropy, and Free Energy **Khan Academy Link: Thermodynamics**

1. Explain what occurs during a spontaneous process.
2. Define entropy.
3. Explain entropy in terms of probability.
4. Use the second law of thermodynamics to determine whether a process is spontaneous.
5. Understand the effect of temperature on the entropy of a system.
6. Define free energy in terms of enthalpy and entropy.
7. Use free energy to determine spontaneity.
8. Calculate the standard entropy of a chemical reaction.
9. Calculate the standard free energy of a chemical reaction.
10. Understand the dependence of free energy on pressure.
11. Use free energy to determine the equilibrium position of a chemical reaction.

Chapter 18 – Electrochemistry **Khan Academy Link: Redox reactions and Electrochemistry**

1. Balance oxidation reduction reactions in acidic or basic solutions.
2. Diagram and explain the purpose of components of a galvanic cell.
3. Calculate the reduction potential of a redox reaction using standard reduction potentials.
4. Use line notation to describe the components of an electrochemical cell.
5. Describe the relationship between cell potential, electrical work, and free energy.
6. Predict the spontaneity of a redox reaction using the relationship between cell potential and free energy.
7. Diagram and explain the purpose of the components of a concentration cell.
8. Apply the Nernst equation to determine the relationship between cell potential and the concentration of cell components.
9. Apply the Nernst equation to determine the equilibrium position for redox reactions.
10. Contrast galvanic and electrolytic cells.
11. Perform stoichiometric calculations on electrolytic processes.

Class assignments and homework

1. CH 17 Homework Packet
2. CH 18 Homework Packet

Tests and Quizzes:

1. CH 17 HW Quiz
2. CH 18 HW Quiz
3. CH 17 – 18 Exam

Lab Experience:

1. Spontaneity Lab
2. Oxidation-Reduction Titration Analysis Lab – Work on Lab week of May 13th

Schedule: AP Chemistry
Chapters 17 – 18: Spontaneity, Entropy, and Free Energy; and Electrochemsitry

Week of March 30th

Day	Concepts	Class Activities	Homework
M 1 – 6	CH 16	Review CH 16	
1st Block	CH 14 - 16	CH 14 – 16 Exam	
2nd Block	CH 17 Introduction Enthalpy Review (you can watch the whole series – we covered this in Chapter 6)	Handout CH 17 Materials 1st Law Review Specific Heat and State Change Review Heat/Work connection (physics)	CH 17 Study Guide and HW
F 1 – 6	CH 17 Goals 1 – 11 Entropy (watch all 5 videos in the series)	CH 17 Overview	CH 17 Study Guide and HW

Week of April 6th

Day	Concepts	Class Activities	Homework
M 1 – 6	**NO SCHOOL**	Teacher Work Day	
1st Block	CH 17 Goals 1 – 11 Gibbs Free Energy (view the next 4 items)	Ch 17 Problem Solving	CH 17 Study Guide and HW
2nd Block	Lab: Spontaneity	Spontaneity Lab	CH 17 Study Guide and HW
F 1 – 6	CH 17 Goals 1 – 11 Gibbs Free Energy and Equilibrium (Finish the video series)	Finish Ch 17 Problem Solving	CH 17 Study Guide and HW

Week of April 13th

Day	Concepts	Class Activities	Homework
M 1 – 6	CH 17 Goals 1 – 11	CH 17 HW Quiz	**DUE:** CH 17 HW Handout
1st Block	CH 18 Goals 1 – 4	Handout CH 18 Materials Oxidation/Reduction Review (you can go through as much of this video series as you need – we covered the concepts in Chapter 4) Notes 18.1 – 18.3	**DUE:** Spontaneity Lab
2nd Block	CH 18 Goal 1 – 4 Balancing Redox RXN in Acid Balancing Redox RXN in Base	Oxidation-reduction balancing Acidic & Basic environments	CH 18 Study Guide and HW
F 1 – 6	CH 18 Goals 5 – 6 LAB Video	Notes CH 18.4 – 18.5 Oxidation-Reduction Titration Pre-Lab	CH 18 Study Guide and HW

Week of April 20th (Early Release Wednesday)

Day	Concepts	Class Activities	Homework
M 1 – 6	CH 18 Goals 5 – 6	Oxidation-Reduction Titration LAB	CH 18 Study Guide and HW
1st Block	CH 18 Goals 5 – 6	Oxidation-Reduction Titration LAB	CH 18 Study Guide and HW
Th 1 – 6	CH 18 Goals 7 – 11 Galvanic Cells (watch the whole series)	Galvanic Cell Diagram Practice	CH 18 Study Guide and HW
F 1 – 6	CH 18 Goals 1 – 11 Standard Cell Potentials (watch the whole series)	Finish CH 18 Problem Solving Demo: Electrochemical Cells	CH 18 Study Guide and HW

Week of April 27th

Day	Concepts	Class Activities	Homework
M 1 – 6	CH 18 Goals 1 – 11 Electrochemistry and Thermodynamics (3 videos) Non-Standard Galvanic Cells Nernst Equation (finish the series) Electrolysis (3 videos)	CH 18 HW Quiz Handout AP Exam Practice	**DUE:** CH 18 HW Handout
1st Block	CH 17 & CH 18 Summative Assessment	CH 17/18 Exam Partner Test!	
Th 5/9	CH 1 – 18	*AP Exam Prep* ***2015 Free Response Problems*** **Galvanic Cell Problem** **Cell Potential Problem** **Nernst Equation Problem**	
F 1 – 6	CH 1 – 18	*AP Exam Prep* **Enthalpy Problem** **Gibbs Free Energy Problem** **Titration Problems (5 videos)** **Ksp Problem**	

Week of May 4th

Day	Concepts	Class Activities	Homework
M 1 – 6	CH 1 – 18	*AP Exam Prep* **Kinetics Problem** **Stoichiometry Problem (2 videos)** **Oxi/Red – Net Ionic Problem**	
1st Block	CH 1 – 18	*AP Exam Prep* **Bonding Problem** **IMF Problem** **Boiling Point Comparison Problem**	
Th 5/9		***AP EXAM!***	
F 1 – 6			