**Electrochemistry Chapter 21**

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**See** [**https://www.learningctronline.com/courses**](https://www.learningctronline.com/courses) **for Materials and Resources.**

**Topics:**

1. Electrochemistry

**Objectives:**

1. Define electrochemistry and describe the components of an electrochemical cell.
2. Identify the types of electrochemical cells based on spontaneity.
3. Use the relative strengths of oxidizing and reducing agents to make predictions of an oxidation/reduction reaction.
4. Describe voltaic cells and explain how voltaic cells work.
5. Give examples and a brief description of common voltaic cells.
6. Describe electrolytic cells and compare electrolytic cells with voltaic cells.
7. Describe the electrolytic processes that happens during electroplating and recharging batteries.
8. Follow rules to assign oxidation numbers to atoms in compounds.
9. Recognize oxidation-reduction (REDOX) reactions and define oxidation and reduction, distinguishing oxidized & reduced species and oxidizing & reducing agents in a REDOX reaction.
10. Write half reactions for oxidation-reduction reactions.
11. Use the half-reaction method to balance oxidation-reduction equations.
12. Use the Electron transfer method/Oxidation number method to balance oxidation-reduction equations.

TAKE NOTE

1. Notes / Study Guide (1 week)
2. Lesson Check/Sample problems or Alternative Worksheets
3. Lab: Voltaic Cell & Electrolysis Simulations
4. REDOX Electrochemistry Test (due within ONE week) … Submit Test for grading and feedback BEFORE taking the semester exam.
5. Semester Exam (Chapters 11-12, 14-21) … Study Guide Available … (due within 10 days after week 32’s class) … review document provided.
6. End of Course Feedback / Recommendation
7. Class Song: We Don’t Say “I Don’t Know”!
8. Week 32 Devotional (<https://www.learningctronline.com/devotional>)

**Text**: Chapter 21: Electrochemistry pp. 726-759

Read the assigned pages in the text.

**Class Notes: PowerPoint or PDF**

**Notes/Study Guide:** Fill in the Chapter 21 worksheet to understand the class notes.

**Homework**: TEXT

(1) Answer the KEYED **"Lesson Check"** questions at the end of each of the chapter.

(2) Answer the **"Sample problems"** found in the "Sample Problem" boxes throughout the chapter. An answer KEY is provided for you to use to self-correct your homework problems.

* Put your answers into complete thoughts in a Word document. Do NOT just put the answer, but write a phrase or sentence that you can study from for your tests. Save your work in a WORD document and SAVE into your HOMEWORK folder in the Chemistry folder on the desktop.
* Assignments will be “spot checked” during class or submitted via email.

**Alternate Homework**:

1. Review Exam (REDOX & Electrochemistry)

**Lab**: Voltaic Cell & Electrolysis Simulations

1. Perform the “Voltaic Cell & Electrolysis” Simulations using the video and worksheet provided.

[Voltaic Cell & Electrolytic Cell (Electroplating) Simulations](http://somup.com/cFeq29Vgf5) (7:42)

1. Answers are provided at the end of the document for guidance, but do NOT copy and paste. Use your own words.
* Save the document into your LAB folder in the Chemistry folder on your desktop.

**TEST:** REDOX & Electrochemistry

1) the academic integrity policy

* Tests must be completed **WITHOUT** referring to books, notes, the internet, people, or any outside resources.
* Students **MAY** use the approved Periodic Tables, approved Reference Tables, or approved equation (formula) sheet (provided by the teacher) along with calculators and scratch paper.
* A guardian should be proctoring the test. Proctoring means to monitor the following:

2) The test is composed of 20 multiple choice questions and some written problems.

* The **multiple-choice test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (40 minutes)
* Take a short break (5-10 minutes)
* The **written portion of the test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (40 minutes)

3) There is a **80-minute time limit** on this test. Please have the proctor write the time taken at the top of your answer sheet with their signature or initials.

4) Proctors should NOT be reading the test or engaging students during the test.

5) Do NOT use RED font. Black font is best.

Supplemental Resources (Optional)

1. Chapter 21 Study Guide Pearson

[Electrochemistry Song: It's Starts at the Anode" (Mark Rosengarten)](http://somup.com/cFX6oini35) (3:28)

<http://somup.com/c3hnqeOGA8> “Baseball Song” JDR Music Video (4:25)

[2 Peter 3:18; Be Still & Know](http://somup.com/cYhlqQjqZi) (4:07)

**TEST:** Semester Exam

1. Use the Review (Study Guide) document to study for the Final Exam. Then, take the Final Exam in the assignments tab.
2. **A guardian should be proctoring your test.** Proctoring means to monitor the following:

1) the academic integrity policy,
2) taking the entire test "in one sitting", and
3) keeping the time limit of 110 minutes.

Proctors should NOT be reading the test or engaging students during the test.
3. For the semester exam you **MAY** use the review study guide during the exam according to the exam strategy shown below. **Do NOT use the study guide until you have gone through the exam twice as directed below.**
4. The test must be completed **WITHOUT** referring to the textbook, the class notes, the internet, people, or any other outside resources on this test.
5. Students **MAY** use the approved Periodic Tables, approved Reference Tables, or approved equation (formula) sheet (provided by the teacher) along with calculators and scratch paper throughout the exam.
6. **The semester exam must be taken in one sitting, meaning that once you open the test, you must complete it without interruption.** There is NO written portion for this exam, only automated (multiple choice).
7. You have **110 minutes** **maximum** to complete the semester exam. You will be penalized for going over the time limit, even 1 minute. Students who have an accommodation should email the teacher regarding the time limit.

**STRATEGY: Take the test "three times".**

1. Go through all the questions and answer the "easier" ones for you first ... to build confidence.
2. Then, go back and carefully consider the ones you did not answer initially. Skip the ones you feel are too hard, you don't understand, or you will look up using the review study guide.
3. Lastly, go to the questions you skipped and make them make sense based on your knowledge of Chemistry. Look up some answers using the review study guide if you have time.

**If you take more than 110 minutes, your score will be reduced UNLESS you have a documented, pre-approved accommodation.**

**The semester exam has 65 multiple choice questions with NO written portion.**



