Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q1 Day 19 – Unit 3 Review, Heat Treating Metals Lab

Topic /Big Questions: (Question Stems & Question Creation Chart)

- **How has the model of the atom changed over time?**
- **What merits and limitations did each model have?**
- **What are the properties of subatomic particles?**
- **How do subatomic particles determine identity of elements?**
- **How does abundance of isotopes affect atomic mass?**
- **How do electrons orbit the nucleus?**
- **How are electrons arranged in orbitals?**
- **How do valence electrons affect chemical reactions?**

State SOL	Unpacking the Standards (Video explanation shown at 3:18)
CH1	CH.1 The student will demonstrate an understanding of scientific and engineering practices by f) obtaining, evaluating, and communicating information
CH 2	The student will investigate and understand that elements have properties based on their atomic structure. The periodic table is an organizational tool for elements based on these properties. Key information pertaining to the periodic table includes a) average atomic mass, isotopes, mass number, and atomic number; b) nuclear decay; d) electron configurations, valence electrons, excited electrons, and ions; and e) historical and quantum models.

Visible Learning (For the three items with asterisks*, think from a student perspective. Use simple language)

***What am I learning today?** History of Atom, Atomic Structure, Average Atomic Mass, Nuclear Chemistry, Electron Configurations. Heat treating metals rearranges their atomic structure and changes their physical properties.

***Why is it important?** The properties of elements, to include the periodic trends, are based on their atomic structure. The periodic table is an organizational tool that allows for the prediction of chemical and physical properties.

***How will I know I've learned it?** I will participate in the review games and lab activities and score 80% or higher on the Unit 3 Test Review

Differentiation strategies:

Quizlet Live Review Games

Science of Metals PowerPoint and Heat Treating Metals Lab

Unit 3 Test Review – due next class

IRP Background Research – final revision due

Accommodations and/or modifications are being met for students with IEP's/504's.

Access to all materials on Schoology, frequent checks for understanding; small group games

Daily Plan/Sequence of Instruction:

Teacher will lead **Quizlet Live** games using Unit 1 through Unit 3 Quizlet files to review material from first quarter.

Teacher will show **Science of Metals PowerPoint** and explain procedure for **Heat Treating Metals Lab.** Students will explore how annealing, quenching, and tempering the metal changes its physical properties. Students will compare interstitial and substitutional alloys.

IRP – Honors Students Background Research final editing correction are due today. Last chance to make changes.

Unit 3 Test Review - Due by the beginning of class on the day of the test. Allow students to start working on it now and ask questions if they need help.

Otherwise, anyone who has been absent, can use this time to catch up on whatever assignments they have missed.

Assessments (List all formative/summative assessments used to check for understanding during this lesson. Summative assessments may occur during a different class period.):

Quizlet Live and Heat Treating Metals Lab (formative)

IRP Background Research and Unit 3 Test Review (summative)

After assessing today's lesson are you and your students comfortable moving forward with your next objective?

Yes - Students actively participated and score 80% or higher on Unit 3 Test Review; honors students score 80% or higher on Background Research

No, remediation required to proceed – If students need help with Test Review or Background Research, they can get assistance during One Lunch

Teacher reflection: College prep students may also need help with specific heat lab calculations. Some students will struggle to keep the information for copper separate for the information for steel. They have trouble understanding what the numbers truly mean. When working one-on-one, make the students tell you what the mass and temperatures are for each variable in the equation. Help them understand that the + and – signs only represent the direction of energy flow, but the quantity of energy remains constant. So the heat leaving the metal is the same amount of heat entering the water.