

Warren County School District
PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Advanced Inorganic Chemistry - Honors

Course Number: 00335

Course Prerequisites: Completion of Chemistry College Preparatory with an 80% average or higher and successful completion of Algebra II College Preparatory or permission of the principal.

Course Description:

This honors course covers the topics of reactions, solutions, kinetics, and equilibrium at a more advanced level than College Preparatory Chemistry. This class meets five class periods per week for one semester the laboratory work will be done during the class period.

Suggested Grade Level: Grades 11-12

Length of Course: ☒ One Semester ☐ Two Semesters ☐ Other (Describe)

Units of Credit: .5 (Insert *None* if appropriate)

PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG 34 Chemistry

Certification verified by WCSD Human Resources Department: ☒ Yes ☐ No

TEXTBOOK AND SUPPLEMENTAL MATERIALS

Continue using Board approved textbook? ☒ Yes ☐ No (*If yes, then complete the information below.*)

Board Approved Textbooks, Software, Supplemental Materials:

Title: Chemistry Matter & Change

Publisher: McGraw Hill Education

ISBN #: 978-0-07-677460-9

Copyright Date: 2017

Date of WCSD Board Approval: Click or tap to enter a date.

BOARD APPROVAL: Click or tap to enter a date.

Date Written: 2/28/2018

Date Approved: Click or tap to enter a date.

Implementation Date: 2018-2019

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modification to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

COURSE OVERVIEW

(List the content to be taught)

Course Standards

PA Academic Standards:

3.1.C.A: CHEMISTRY

3.1.C.B: CHEMISTRY

3.1.C.C: CHEMISTRY

3.2.C.A: CHEMISTRY

3.2.C.B: CHEMISTRY

3.3.C.A: CHEMISTRY

3.3.C.B: CHEMISTRY

Common Core Standards:

CC.3.5.11-12 Reading Informational Text

CC.3.6.11-12 Writing

REQUIRED COURSE SEQUENCE

(Content must be tied to objectives)

Content Sequence

I. Reactions

A. Determine the precipitate and write the net-ionic equation

B. Balance oxidation reduction reactions

1. Acidic

2. Alkaline

II. Concentration Units

A. Solution Formation

B. Calculate

1. Molarity

2. Molality

3. Mole Fraction

4. Dilution

5. Solution Preparation

III. Colligative Properties

A. Use bond type (covalent and ionic) and polarity to determine solubility

- B. Calculate vapor pressure, freezing point, and boiling point changes
- C. Determine molar mass
- IV. Reaction Kinetics
 - A. Interpret and complete energy curves, showing the activation energy, catalyst path, and overall energy change
 - B. Write a rate law using multiple time and concentration experiments
 - C. Explain the factors that determine reaction spontaneity
- V. Equilibrium
 - A. Calculate an equilibrium constant from equilibrium concentrations
 - B. Calculate equilibrium concentrations from initial concentrations and the equilibrium constant
- VI. Acids and Bases
 - A. Know the definitions of acids and bases
 - B. Acid and base reactions
 - C. Use acid and base strength to determine the species in solution
 - D. Calculate the pH of solutions
 - E. Calculate concentrations using titration methods
- VII. Weak Acid and Base Equilibrium
 - A. Predict the species in solution in a weak acid or base solution
 - B. Calculate equilibrium concentrations of a weak acid or a weak base, a mixture of acids, and for polyprotic acids

Laboratory Investigations: Each unit should include at least one lab used to aid in the understanding of the lecture material.

Objectives:

1. Evaluate scientific processes by collecting data and applying knowledge to physical models to interpret data.
2. Assess and apply patterns in reactions, colligative properties, kinetics, and equilibrium.
3. Evaluate data correctly to form conclusions.
4. Characterize and identify reactions and solutions.
5. Interpret a system's reaction kinetics.
6. Describe equilibrium systems mathematically.
7. Balance oxidation reduction reactions.

ASSESSMENT

Portfolio Assessment: ☐Yes ☒No

District-Wide Common Final Examination Required: ☒Yes ☐No

Course Challenge Assessment (Describe): Must pass final examination with an 80% or better

WRITING TEAM: Warren County School District Teachers

WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? ☒ Yes ☐ No

**Warren County School District Policy 9741 and 9744 state, "All classes in grades 9-12 shall have a final exam."*

2. Does this course issue a mark/grade for the report card? ☒ Yes ☐ No

3. Does this course issue a Pass/Fail mark? ☐ Yes ☒ No

4. Is the course mark/grade part of the GPA calculation? ☒ Yes ☐ No

5. Is the course eligible for Honor Roll calculation? ☒ Yes ☐ No

6. What is the academic weight of the course?

☐ No weight/Non credit

☐ Standard weight

☒ Enhanced weight