Warren County School District

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Advanced Inorganic Chemistry – Honors

Course Number: 00335

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

Course Description: (Include "no final exam" or "final exam required")

This honors course covers the topics of reactions, solutions, kinetics, and equilibrium at a more advanced level than College Prep Chemistry. This class meets five periods per week for one semester. Lab work will be done throughout the semester and there will be a final exam.
Prerequisites: Completion of College Prep Chemistry with an 80% average or higher and successful completion of Algebra II or permission of the principal.

Suggested Grade Level: 11-12

Length of Course: X One Semester _____ Two Semesters _____ Other (Describe)

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

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s)
(Insert certificate title and CSPG#) Chemistry

Certification verified by WCSD Human Resources Department:
X Yes _____ No

Board Approved Textbooks, Software, Materials:
Title:
Publisher:
ISBN #:
Copyright Date:
Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: September 2009

Date Approved: _____

Implementation Year: _____

Suggested Supplemental Materials: (List or insert **None**)

Course Standards

PA Academic Standards: (List by Number and Description)

3.1.12 Unifying Themes
- A. Apply concepts of systems, subsystems, feed back and control to solve complex technological problems.
- B. Apply concepts of models as a method to predict and understand science and technology.
- C. Assess and apply patterns in science and technology.
- D. Analyze scale as a way of relating concepts and ideas to one another by some measure.
- E. Evaluate change in nature, physical systems and man made systems.

3.2.12 Inquiry and Design
- A. Evaluate the nature of scientific and technological knowledge.
- B. Evaluate experimental information for appropriateness and adherence to relevant science processes.
- C. Apply the elements of scientific inquiry to solve multi-step problems.
- D. Analyze and use the technological design process to solve problems.

3.4.12 Physical Science, Chemistry and Physics
- A. Apply concepts about the structure and properties of matter.
- B. Apply and analyze energy sources and conversions and their relationship to heat and temperature.

3.7.12 Technological Devices
- A. Apply advanced tools, materials and techniques to answer complex questions.
- B. Evaluate appropriate instruments and apparatus to accurately measure materials and processes.

WCSD Academic Standards: (List or **None**)

None

Industry or Other Standards: (List, Identify Source or **None**)

None

WCSD EXPECTATIONS

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction.

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

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

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

(List Objectives, PA Standards #'s, Other Standards (see samples at end))

ASSESSMENTS

PSSA Assessment Anchors Addressed:

This course is written to the 12th grade standards. No assessment anchors have been written for this level.

Suggested Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

- Pre-Assessments of prior knowledge (e.g. entrance cards or KWL chart)
- Labs/lab reports
- Bell ringers/Problems of the Day(PODs)
- Discussions
- Teacher observation/Questioning
- Graphic organizers (e.g. Venn diagrams, word mapping, webbing, KWL chart, etc.)
- Summarizing
- Retelling
- Notetaking
- Problem-based learning modules
- Authentic assessment
- Oral presentations
- Outlining
- Journaling
- Student presentations/projects
- Open-ended response
- Quizzes/tests
- Activities
- Classroom Performance System (CPS)
- White boards

Suggested Summative Assessments:

- Essays
- Open-Ended Responses
- Projects
- Quizzes/tests
- Student presentations
- Portfolios
- Lab Practical
- Lab Report

Portfolio Assessment: _____ Yes __X__ No

District-wide Final Examination Required: _____ Yes __X__ No

Course Challenge Assessment (Describe):

REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Content Sequence	Dates
I. Reactions	**12Days**
A. Determine the precipitate and write the net-ionic equation	
B. Balance oxidation reduction reactions	
1. Acidic	
2. Alkaline	
II. Concentration Units	**10 Days**
A. Solution Formation	
B. Calculate	
1. Molarity	
2. Molality	
3. Mole Fraction	
4. Dilution	
5. Solution Preparation	
III. Colligative Properties	**12 Days**
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	**17 Days**
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	**10 Days**
A. Calculate an equilibrium constant from equilibrium concentrations	
B. Calculate equilibrium concentrations from initial concentrations and the equilibrium constant	

VI. Acids and Bases **17 Days**

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 **12 Days**

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.

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WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? ___X___ Yes _____ No
2. Does this course issue a mark/grade for the report card?

   ___XYes _____ No
3. Does this course issue a Pass/Fail mark? _____Yes ___X___ No
4. Is the course mark/grade part of the GPA calculation?

   ___X___Yes _____ No
5. Is the course eligible for Honor Roll calculation? ___X Yes _____ No
6. What is the academic weight of the course?

   _____ No weight/Non credit _____ Standard weight

   ___X___ Enhanced weight (Describe) As per current Board policy