

Warren County School District
PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Chemistry

Course Number: 00330

Course Prerequisites: _____

Course Description:

The science of chemistry deals with the structure of matter, its properties and the changes it undergoes. Living by Chemistry applies these concepts to real world problem solving. This course utilizes basic mathematical skills and includes hands on activities and laboratory applications.

Suggested Grade Level: Grades 10-12

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

Units of Credit: 1 (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: Physical Science

Publisher: McGraw Hill Education

ISBN #: 978-0-07-677456-2

Copyright Date: 2017

Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: 2/28/18

Date Approved: _____

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)

PA Science 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

Content:

I. Nature of Science

A. Scientific Method

1. Lab Equipment
2. Lab Safety
3. Data Collection (qualitative vs. quantitative)
4. %Error

B. Measurement

1. metric system
2. mass
3. Density
4. Temperature

C. Graphing

II. Matter and Changes

A. Types of Matter and Separations

B. States of Matter

C. Physical

1. Properties
2. Changes

D. Chemical

1. Properties
2. Changes

III. Atomic Theory and Periodic Table

A. Development of Atomic Theory

1. Dalton's Atomic Theory
2. Thomson
3. Rutherford
4. Bohr
5. Electron cloud model

B. Atomic Particles

C. Isotopes

D. History and Organization of the Periodic Table

- E. Movement of electrons – ground state vs. excited state
- F. Octet Rule
- G. Groups and periods
- H. Group characteristics

IV. Bonding

- A. Ionic bonds
- B. Covalent bonds
 - 1. Polar Covalent
 - 2. Nonpolar Covalent

V. Formula Writing and Nomenclature

- A. Ionic
 - 1. Binary
 - 2. Ternary – Polyatomic ions
- B. Molecular (Covalent)

VI. Chemical Reactions

- A. Balancing
 - 1. Law of Conservation of Mass
 - 2. Skeleton equations
 - 3. Understanding chemical equations
 - *mole, molar mass, mole-mass conversions, Avogadro's #, Scientific notation
- B. Reaction Types
 - 1. Single Replacement
 - 2. Double Replacement
 - 3. Synthesis (Combination)
 - 4. Decomposition
 - 5. Combustion
 - 6. Energy changes (endothermic vs. exothermic)
- C. Factors That Affect Reaction Rate

VII. Gases

- A. Kinetic Molecular Theory
 - 1. Gas Pressure
 - 2. Atmospheric Pressure
 - 3. Temperature
- B. Gas Laws
 - 1. Relationships Between Pressure, Temperature, and Volume
 - 2. Dalton's Law of Partial Pressures

VIII. Heat and Phase Changes

- A. Heat and Specific Heat
- B. Calculating Heat
- C. Phase Changes

IX. Nuclear Chemistry

- A. Nuclear Particles
- B. Reactions
- C. Half-life
- D. nuclear waste
- E. Applications: nuclear energy and reactors, nuclear medicine,

X. Acid – Base

- A. Definitions
- B. Properties
- C. Neutralization
- D. pH

XI. Chemistry in Everyday Life and Career

- A. Applications to:
 - 1. Culinary
 - 2. Welding and metals
 - 3. Medical
 - 4. Engines
 - 5. Farming
- B. Chemistry in the Home
 - 1. Reaction safety
 - 2. Kitchen chemistry

ASSESSMENT

Portfolio Assessment: ☐ Yes ☒ No

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

Course Challenge Assessment (Describe): Successful completion of the course final exam at 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