WTCS Repository

10-806-134 General Chemistry

Course Outcome Summary

Course Information

Description Covers the fundamentals of chemistry. Topics include the metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws.

Total Credits 4.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Follow accepted standards for safety and hygiene procedures in the chemistry laboratory

Assessment Strategies

1.1. on a written test
1.2. in lab performance

Criteria

Your performance will be successful when:

1.1. you identify safety equipment
1.2. you identify safety procedures
1.3. you identify laboratory equipment
1.4. you use Material Safety Data Sheets (MSDS)
1.5. you follow safety procedures when using laboratory equipment

2. Examine the scientific method and tools to solve problems

Assessment Strategies

2.1. on a written test
2.2. on homework assignments
2.3. in lab assignments

Criteria

Your performance will be successful when:

2.1. you apply the steps in the scientific method to problems
2.2. you record quantitative observations
2.3. you record qualitative observations
2.4. you construct models that are supported by observations
2.5. you draw conclusions from your observations and model

Learning Objectives

2.a. Identify the steps in the scientific methods

3. Solve problems using measurements and conversions

Assessment Strategies

3.1. on a written test
3.2. on homework assignments
3.3. in lab assignments

Criteria

Your performance will be successful when:

3.1. you use scientific tools and methods to solve problems
3.2. you use the various systems of measurements
3.3. you convert within and between systems of measurement
3.4. you round off numbers
3.5. you write numbers using appropriate significant figures
3.6. you use scientific notation
3.7. you distinguish between accuracy and precision
3.8. you solve word problems
3.9. you determine derived properties (such as density, heat capacity, volume, area)

4. Explain the characteristics of matter and the changes it undergoes

Assessment Strategies

4.1. on a written test
4.2. on homework assignments
4.3. in lab assignments

Criteria

Your performance will be successful when:

4.1. you distinguish among the physical states of matter
4.2. you identify changes in physical states of matter
4.3. you distinguish between mixtures and pure substances
4.4. you distinguish between compounds and elements
4.5. you relate physical states to intermolecular forces

5. Analyze the periodic relationships of the elements

Assessment Strategies

5.1. on a written test
5.2. on homework assignments
5.3. in lab assignments

Criteria

Your performance will be successful when:

5.1. you explore the basic structure of the atom
5.2. you explore the properties of subatomic particles
5.3. you use the periodic table to determine the atomic symbol, atomic number, and atomic mass of an element
5.4. you use the periodic table to determine the electronic confirguration of an atom
5.5. you classify an element as to metal, nonmetal, noble gas
5.6. you explain periodic relationships

6. Explore chemical bonding

Assessment Strategies

6.1. on a written test
6.2. on homework assignments
6.3. in lab assignments

Criteria

Your performance will be successful when:

6.1. you determine valence electrons for main group elements
6.2. you relate octet rule to chemical bonding
6.3. you explain the formation of an ionic bond
6.4. you use the periodic table to determine ionic charge
6.5. you explain the formation of a covalent bond
6.6. you use the periodic table to determine an element's covalence
6.7. you relate electronegativity differences between atoms to the type of bond they form
6.8. you create molecular models

7. Explain the behavior of matter during a chemical reaction

Assessment Strategies

7.1. on a written test
7.2. on homework assignments
7.3. in lab assignments

Criteria

Your performance will be successful when:

7.1. you differentiate between physical, nuclear and chemical changes
7.2. you describe chemical reactions using equations
7.3. you classify types of reactions
7.4. you relate experimental observations to chemical changes

8. Calculate quantities of reactants and products using balanced chemical equations

Assessment Strategies

8.1. on a written test
8.2. on homework assignments
8.3. in lab assignments

Criteria

Your performance will be successful when:

8.1. you relate atomic mass to gram molecular weight
8.2. you balance chemical equations
8.3. you use the mole concept to solve stoichiometry problems

9. Calculate the concentration of aqueous solutions

Assessment Strategies

9.1. on a written test
9.2. on homework assignments
9.3. in lab assignments

Criteria

Your performance will be successful when:

9.1. you explain the components of a solution
9.2. you calculate solution concentrations
9.3. you solve concentration problems
9.4. you explore factors affecting solubility
9.5. you explore colligative properties

10. Explain chemical equilibrium

Assessment Strategies

10.1. on a written test
10.2. on homework assignments
10.3. in lab assignments

Criteria

Your performance will be successful when:

10.1. you summarize dynamic equilibrium
10.2. you apply Le Chatelier's priniciple

11. Compare the characteristics of acids, bases, salts, and buffers

Assessment Strategies

11.1. on a written test
11.2. on homework assignments
11.3. in lab assignments

Criteria

Your performance will be successful when:

11.1. you distinguish between the properties of acids and bases
11.2. you characterize acid-base reactions
11.3. you examine the pH scale
11.4. you calculate the pH of a solution
11.5. you summarize how a buffer works

12. Solve problems involving gas laws

Assessment Strategies

12.1. on a written test
12.2. on homework assignments
12.3. in lab assignments

Criteria

Your performance will be successful when:

12.1. you explore the kinetic molecular theory
12.2. you use appropriate units of measure for temperature, pressure and volume
12.3. you apply the gas laws to solve problems