

Course Outline

Department : Bilinugual

Teacher's name : Mr. Randolph A. Domingo Jr.

Name of Subject: Chemistry

Code : 32284

Level:

Primary _____

Secondary _____

1st - 2nd Semester / 2014

Subject :

Main Subject

Optional Subject

Development Activities

Others

Course Description

This course provides the basics of CHEMISTRY to the Secondary 5 students in the current academic school year for the 1st semester. The course will give the students the content and skills that are necessary in understanding Chemistry in its higher complexity. Hence, to achieve the purpose for this preparatory course, it will be divided into 3 units. These units are entitled as Unit 1: Atomic Structures, Unit 2: The Periodic Table, and Unit 3: Chemical Bonding.

Grade Level Indicators

1. Search for data and explain structure of atoms and nuclear symbols of elements.
2. Analyze and explain electronic configuration in atoms and relationship between electrons in outermost energy- level with properties of elements and formation of reactions.
3. Explain sequencing of elements and predict properties of elements in the Periodic Table.
4. Analyze and explain formation of chemical bonds in crystal network and in molecules of substances.
5. Search for data and explain relationship between boiling point, melting point and state of substances with binding forces between particles of substances.

Learning Objectives:

Indicators of Semester	In accordance with government curriculum
1. Diagram the different models of the atom in history	Yes
2. Describe the three types of subatomic particles	Yes
3. Solve word problems on Proton number and Nucleon number	Yes
4. Decipher the electronic configuration of an atom	Yes
5. Explain the basis for the arrangements of elements in the periodic table	Yes
6. Describe the stability of atoms through the use of the Octet Rule	Yes
7. Demonstrate the formation of ions	Yes
8. Diagram the formation of chemical bonds in molecules and compounds	Yes
9. Write the chemical formula of a compound and a molecule correctly based from the chemical structure.	Yes

Content of Subjects

Time Duration	Subject Content
Beginning of the Semester- Midterm	Unit One: Atomic Structures 1.1 History of the Atom 1.2 Different Atomic models 1.3 Atomic Theory 1.4 Atomic Number, Proton Number, and Nucleon Number 1.5 Electron Configuration
	Unit Two: Periodic Table 2.1 Periodic Trends 2.2 Characteristics and Properties of the elements a. Group 1A b. Group 2A c. Group 16 d. Group 17 e. Group 18 f. Transition Metals 2.3 Uses of the Elements
Post Midterm - Finals	Unit Three: Chemical Bonding 3.1 Stability of Elements 3.2 Formation of Ions 3.3 Ionic Bonding a. Properties of Ionic Compounds b. Characteristics of Ionic Compounds 3.4 Covalent Bonding a. Properties of Covalent Compounds b. Characteristics of Covalent Compounds

Evaluation

1. Average marks for evaluation:

Authentic Assessment: Written/ Practical Examination

60:40

2. Evaluation of Learning Objectives

Semester	Learning Objectives
1	Items 1-10

The First Semester

Pre-test Marks..... 35 Marks (Authentic Assessment)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
1	Clay molding activity, Arranging sequences	5
2	Essay writing, Identification	5
3	Problem Solving,	5
4	Problem Solving, Puzzle	10
5	Puzzle , Research Activity	5

Midterm Marks..... 15 Marks (Written/ Practical Exam)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
1,2	Multiple Choice, True or False,	5
3,4	Problem Solving	15

Post- test Marks..... 35 Marks (Authentic Assessment)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
6	Illustration	10
7	Illustration, Analogy analysis, Recitation	5
8	Problem Solving, Diagramming, Puzzle	10
9	Chemical bonding diagramming, Illustration	5

Final Marks..... 15 Marks (Written/ Practical Exam)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
5,6,7	Multiple Choice, True False	10
6,8,9	Problem Solving, Diagramming	10

References:

1. Sackheim G. & Lehman D. (2002). *Chemistry for health sciences*. Singapore: Pearson Education Asia Pte. Ltd.
2. Padolina C. (2004). *Conceptual and functional chemistry*. Makati City:Vibal Publishing Inc.
3. Orient Blackswan Private Limited. (2012). *My world of science chemistry*: Orient Blackswan Private Limited.

Web References:

1. www.aboutchemistry.com
2. www.wisegeek.com
3. www.nclark.net/PeriodicTable.html

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Department : Bilinugual

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Name of Subject: Chemistry

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Level:

Primary _____

Secondary _____

1st - 2nd Semester / 2014

Subject :

Main Subject

Optional Subject

Development Activities

Others

Course Description

The Chemistry course in the second semester of the current academic school year delves into the advance topics which require the understandings of its basics concepts as a pre-requisite. This course will provide an overview on the nomenclature of the compounds discussed in the first semester, the nature of the reaction these compounds undergo and the different organic compounds these chemical bonding make. Thus, three units will be used to achieve this purpose. These units are entitled as follows. Unit One: Chemical Bonding, Unit Two: Chemical Reactions and Unit Three: Organic Compounds.

Grade Level Indicators

1. Experiment, explain and write equations of general chemical reactions found in daily life as well as explain effects of chemical substances on living things and the environment.
2. Experiment and explain the rates of chemical reactions and factors affecting chemical reactions and apply the knowledge gained for useful purposes.
3. Search for data and explain the origin of petroleum, natural gas separation and fractional distillation of crude oil.
4. Search for data and discuss application of products from natural gas and fractional distillation of crude oil for useful purposes as well as effects of these products on living things and the environment.
5. Experiment and explain the origin of polymers and their properties.
6. Discuss utilization of polymers for useful purposes as well as effects from production and utilization of polymers on living things and the environment.
7. Experiment and explain the components, benefits and some kinds of reactions of carbohydrates.
8. Experiment and explain benefits and some kinds of reactions of fat and oil.
9. Experiment and explain the components, benefits and some kinds of reactions of proteins and nucleic acids.

Learning Objectives:

Indicators of Semester	In accordance with government curriculum
1. Name compounds correctly by following the rules of correct nomenclature	Yes
2. Describe the factors that affects chemical reaction	Yes
3. Write the chemical equations of the types of chemical reactions	Yes
4. Differentiate the three basic types of organic compounds	Yes
5. Give the importance of organic compounds to the society	Yes
6. List the advantages and disadvantages of alternative fuels	Yes
7. Give the description of macromolecules	Yes
8. Explain the importance of natural and synthetic polymers	Yes
9. Differentiate the natural polymers correctly based on the structure of the polymer	Yes
10. Relate the different natural polymers to the health of the individual	Yes

Content of the Subjects

Time Duration	Subject Matter
Beginning of the Semester- Midterm	<p>Unit One: Chemical Compounds</p> <ul style="list-style-type: none">1.1. Writing Formulas of Chemical Compounds<ul style="list-style-type: none">a. Covalent Compoundsb. Ionic Compounds1.2. Naming Chemical Compounds<ul style="list-style-type: none">a. Covalent Compoundsb. Ionic Compounds<ul style="list-style-type: none">b.1. Acidsb.2. Basesb.3. Salts <p>Unit Two: Chemical Reactions</p> <ul style="list-style-type: none">2.1. Types of Chemical Reactions<ul style="list-style-type: none">a. Synthesis Reactionb. Decomposition Reactionc. Single Replacement Reactiond. Metathesis Reaction2.2. Speed of Chemical Reaction<ul style="list-style-type: none">a. Factors affecting Chemical Reaction speed
Post Midterm- Finals	<p>Unit Three: Organic Compounds</p> <ul style="list-style-type: none">3.1. Carbon3.2. Homologous Series<ul style="list-style-type: none">a. Alkanesb. Alkenesc. Alkynes3.3 Functional Groups<ul style="list-style-type: none">a. Alcoholsb. Estersc. Ethersd. Ketonese. Carboxylic Acids3.4. Fuels

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- a. Petroleum
 - b. Natural Gas
 - c. Alternative Fuels
 - d. Importance of Fuels
 - e. Advantages and Disadvantages of Fuel
- 3.5. Macromolecules
- a. Carbohydrates
 - b. Fats
 - c. Proteins
 - d. Synthetic Polymers
 - d.1. Plastics
 - d.2. Styrofoams
- 3.6. Benefits and Consequences of Synthetic Polymers
- 3.7. Natural Polymers and your health
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Evaluation

1. Average marks for evaluation:

Authentic Assessment: Written/ Practical Examination

60:40

2. Evaluation of Learning Objectives

The Second Semester

Semester	Learning Objectives
2	Items 1-11

Pre-test Marks..... 35 Marks (Authentic Assessment)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
1	Crossword Puzzle, Naming Activity	10
2	Essay writing, Experiment	5
3	Story analysis, Equation Writing	5
4	Problem Solving, Puzzle	5
5	Puzzle, Research Report, Recitation, Trivia sharing	5

Midterm Marks..... 15 Marks (Written/ Practical Exam)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
1, 2, 3	Multiple Choice, True or False	5
5	Essay, Illustration	5
1, 3, 4	Problem Solving	10

Post- test Marks..... 35 Marks (Authentic Assessment)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
6	Illustration, Comparison, Story Analysis	10
7	Illustration, Recitation, Identification	5
8	Essay, Trivia, Analogy	5
9	Chemical bonding diagramming, Illustration	5
10	Reporting, Research Activity	5

Final Marks..... 15 Marks (Written/ Practical Exam)

Learning Objectives Items	Criteria Followed for Assessment	Maximum Marks
6, 7	Multiple Choice, True False, Odd One Out	5
8, 9, 10	Diagramming, Essay, Justification	15

References:

1. Sackheim G. & Lehman D. (2002). *Chemistry for health sciences*. Singapore: Pearson Education Asia Pte. Ltd.
2. Padolina C. (2004). *Conceptual and functional chemistry*. Makati City: Vibal Publishing Inc.
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