

Academic Year 2015/2016

Mrs. Lucy Penenian

Grade 9

Chemistry

Content	Learning Objectives
The Atom	<ul style="list-style-type: none">-Identify the fundamental particles of the atom-Indicate the atomic number and atomic mass number of an atom- Recognize the isotopes-Explain the mole and the molar mass
Electron Arrangements in Atom and the Periodic Table	<ul style="list-style-type: none">-Describe the energy levels- Describe the modern periodic table-Describe the relationship between the arrangement of elements on the periodic table and the properties of those elements-Writing the electron configuration of the first twenty elements of the periodic table
Chemical Bonding	<ul style="list-style-type: none">-Describe the stability of inert gases-Identify valence electrons-Know the valency of an element-Draw Lewis electron-dot symbols to indicate the arrangement of valence electrons for the first twenty elements in the periodic table-Describe the octet and the duet rule-Explain the single covalent bond, double covalent bond and triple covalent bond-Describe ionic bond-Compare between the chemical and physical properties of ionic and covalent compounds
Oxidation-Reduction reactions	<ul style="list-style-type: none">-Distinguish between oxidation and reduction-Write oxidation and reduction half reactions-Explain what oxidation numbers are and how they are assigned-Identify substances that are oxidized and those that are reduced in a redox reaction-Distinguish between oxidizing and reducing agents in redox reactions.
Electrochemical Cells	<ul style="list-style-type: none">-Distinguish between galvanic and electrolytic cells-Describe how to construct a galvanic cell.-Describe electrolysis of water-Describe electroplating

Aliphatic Hydrocarbons	<ul style="list-style-type: none"> -Distinguish between organic and inorganic compounds -Explain the importance of carbon in organic compounds -Describe a hydrocarbon -Classify aliphatic hydrocarbons into alkanes, alkenes and alkynes -Deduce the general formula of alkanes, alkenes and alkynes
Alkanes	<ul style="list-style-type: none"> - Describe the straight chain alkanes -Deduce the alkyl groups from alkanes -Describe the branched chain alkanes and cycloalkanes -Identify the systematic naming of alkanes -Describe the structural isomers -Recognize the physical properties of alkanes
Alkenes and alkynes	<ul style="list-style-type: none"> -Describe the structural and condensed structural formula of the first three alkenes and alkynes
Chemical reactions of alkanes, alkenes and alkynes	<ul style="list-style-type: none"> -Describe Complete combustion of alkanes, alkenes and alkynes -Describe the substitution reactions of alkanes -Describe the addition reactions of alkenes and alkynes
Aromatic hydrocarbons and esterification	<ul style="list-style-type: none"> -Define aromatic hydrocarbons -Describe esterification -Describe alcohols and carboxylic acids -Know what is saponification?
Petroleum and synthetic materials	<ul style="list-style-type: none"> -Identify the major sources of energy -Describe fractional distillation of petroleum -Describe cracking
Synthetic materials	<ul style="list-style-type: none"> -Define synthetic polymers -Know how are plastics obtained
Chemistry and Environment	<ul style="list-style-type: none"> -Define pollution -Name some principal pollutants -Identify the principal sources of pollution -Recognize the causes of air pollution, water pollution and soil pollution
Effects of pollution	<ul style="list-style-type: none"> -Describe greenhouse effect -Know ozone depletion -Know how acid rain is formed