

Newark Catholic High School

Chemistry II

Teacher: P.J. Miller

Hours: 7:45 am -- 3:15 pm

Help sessions and appointments may be arranged outside the above hours

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[View the Text Book outline](#)

Grading Procedure:

- Quarterly grades will be determined on the basis of total points.
- Required written work will include homework and lab reports.
- Quizzes and tests will be completed during class time.
- Both semester exams will be comprehensive.
- All written work must be turned in on the due date in order to receive full credit.
- Credit for late work may be reduced by up to 25% for each day beyond the due date.

Grade Scale:

A	100-93	C	76-73	D+	69-67
A-	92-90	C+	79-77	D	66-63
B+	89-87	C-	72-70	D-	62-60
B	86-83			F	Below 60
B-	82-80				

Classroom Rules:

1. Be on time
2. Be seated
3. Be quiet
4. Be attentive
5. Be prepared
6. Be respectful
7. Be honest
8. Be observant of all laboratory safety procedures (Lab Safety Contract)
9. Be observant of all school rules

The student will:

Organic Hydrocarbons

- determine the molecular formula of a saturated or unsaturated hydrocarbon from its general formula
- name the simpler straight chain and branched hydrocarbons using IUPAC rules
- draw the structural formulas of characteristic alkanes, alkenes, alkynes, and aromatic hydrocarbons
- draw the structural formula of a hydrocarbon from its IUPAC name
- draw the structural formula of all the isomers of a particular hydrocarbon
- write equations for the preparation and reactions of the hydrocarbons using reaction mechanisms as a pattern

Organic Oxygen Compounds

- identify the functional groups of alcohols, phenols, ethers, aldehydes, ketones, and carboxylic acids

- draw structural formulas of characteristic members of all classes of organic oxygen compounds
- draw structural formulas for all isomers of a particular organic oxygen compound
- name organic oxygen compounds using IUPAC rules
- write equations for the preparation and reactions of the organic oxygen compounds using reaction mechanisms as a pattern

Organic Polymers

- describe the types of monomers required to make addition and condensation polymers
- describe the reaction process in forming addition polymers and condensation polymers
- identify the monomers used to make a polymer from the polymer's structural formula
- draw the structural formula of a condensation or addition polymer given the monomers

Oxidation-Reduction Reactions

- assign oxidation numbers to the elements in a compound or ion using the oxidation number rules
- determine from the oxidation numbers the elements which are being oxidized or reduced in a reaction
- determine the number of electrons transferred in an oxidation or reduction reaction
- write oxidation and reduction half-reaction equations
- balance oxidation-reduction equations using the half-reaction method
- determine whether a substance can act as an oxidizing agent or reducing agent

Electrochemistry

- draw a diagram of a voltaic cell and label the anode and cathode
- indicate the direction of electron flow and ion flow in a voltaic cell
- write equations for the anode and cathode reactions of a voltaic cell
- determine the standard voltages of the half-cells and the total cell voltage
- determine whether a given redox reaction will occur spontaneously

Chemical Calculations

- use the mole concept in calculations
- solve mass-mass, mass-volume, volume-volume, and limiting reactant problems
- calculate % yield
- calculate changes in enthalpy, entropy, and free energy
- perform calculations based on the rate law
- solve problems using the equilibrium constant expression

Coordination Compounds

- indicate the coordination number about the metal and the oxidation number of the metal in a complex
- sketch the structure of a complex given its formula
- name complexes using the rules of nomenclature
- write the formula of a complex from its name
- draw structures of complexes illustrating geometrical isomerism, linkage isomerism, optical isomerism, and coordination-sphere isomerism
- illustrate how the crystal-field theory accounts for many properties of coordination compounds

Nuclear Chemistry

- compare the three types of radiation (alpha, beta, and gamma) on the basis of properties
- balance nuclear equations
- solve half-life problems
- contrast and compare fission and fusion as sources of energy

Qualitative Analysis

- perform safely and accurately the known experiments following flow charts and recording results
- identify cations in an unknown mixture by group separation
- identify the anion in an unknown