Dalian Maple Leaf International School
2018-2019 Academic Year
(Chemistry 11)
(11年级化学)

Course Overview

Chemistry 11 is an introductory course in which students will develop an understanding and appreciation of basic chemistry. Chemistry is the branch of science concerned with matter – the stuff that has mass and occupies space. In this course we will study the composition and properties of matter, and the changes that matter undergoes.

Topics Covered

Term 1

- Unit 0: Intro to Chemistry/Safety
- Unit 1: Nomenclature/ Reaction Types
- Unit 2: Atomic theory and the Periodic Table
- Unit 3: Bonding and Polarity
- Unit 4: Solution Chemistry

Term 2

- Unit 5: Measurements, Units, Significant figures
- Unit 6: Mole
- Unit 7: Stoichiometry
- Unit 8: Organic Chemistry

Mark Distribution	Weighting
Quiz	**6%**
Science Fair	**10%**
Test	**30%**
Midterm	**10%**
Lab/Assignments	**24%**
Final Exam	**20%**

Classroom Expectations

- **Respect** others (peers and the teacher), the school (property and equipment), and yourself
  - Listen when teacher and other students talk
  - Work quietly so others can focus
  - Throw away all garbage at the end of the day
  - Keep your cell phones put away at the end of the day
- Students are expected to speak English in class – includes name, learn them
- Cheating and plagiarism is **unacceptable**– no duplicate lab, reports. Cheating and plagiarism will result in severe consequences.

Late Attendance and Work

- Students are expected to be in full uniform and in class *on time*. Any missed class time must be made up to me after school (3:30-4:30)
- Turn in work on time. Late work will be accepted, but the mark will be affected by a social responsibility mark.

Absences

- Any absence must be justified (noted as excused in PowerSchool system)
- Students must notify me in advance if they will be missing a class
- Students will be expected to write the test/quiz on the *first day back*

Policies

- **Zero-Policy:** Students have an opportunity to make up work during the week before the exam (Midterm and Final) and therefore have the chance to get above a zero on an assignment
- **Reassessment Policy:** retest can be done for each unit but must be earned (attending tutorial and doing practice questions)
- **WeChat Policy:** We will have a class WeChat group. Any discussions about marks will not be tolerated over the group chat. Additionally, Ms. Funk does not answer any questions/comments after 21:00.

Come prepared to learn

- Students are expected to come to class with all necessary materials
  - A4 Binder (with paper and dividers)
  - Pen, pencil, and highlighter
  - Calculator
  - Student agenda

***** Remember to bring these materials to every class everyday *****

- Communicate with me if there are reasons for you to not participate in an lab, quiz, test, or a project. I am here to help you, but you need to communicate with me how I can help you.

Chemistry 11 Vocabulary (词汇)

Word	Definition
Acid	This is anything that gives off H^+ ions in water. Acids have a pH less than 7.
Activation Energy	The minimum amount of energy needed for a chemical reaction to take place.
Actual Yield	The amount of chemical that you actually make in a chemical reaction.
Alcohol	An **organic** molecule containing an -OH group.
Alkali Metals	Group I elements in the periodic table.
Alkaline Earth Metals	Group II elements in the periodic table.
Alloy	A mixture of two metals.
alpha particle	A radioactive particle equivalent to a helium nucleus (2 protons, 2 neutrons).
aqueous	dissolved in water
Atomic Mass Unit (a.m.u.)	This is the smallest unit of mass we use in chemistry, and is equivalent to 1/12 the mass of carbon-12.
Base	A compound that gives off OH^- ions in water. They are slippery and bitter and have a pH greater than 7.
Beta particle	A radioactive particle equivalent to an electron.
Catalyst	A substance that speeds up a chemical reaction without being used up by the reaction.
Chemical properties	Properties that can only be described by making a chemical change (by making or breaking bonds).
Combustion	When a compound combines with oxygen gas to form water, heat, and carbon dioxide
Concentration	A measurement of the amount of stuff (solute) dissolved in a liquid (solvent).
Condensation	When a vapor reforms a liquid.
Covalent bond	A chemical bond formed when two atoms share electrons.
Crystal	A large chunk of an ionic solid.
Decomposition	When a big molecule breaks into two or more little ones.
Diffusion	When particles move from areas of high concentration to areas of low concentration.
Dilution	When you add solvent to a solution to make it less concentrated.
Dipole moment	When a molecule has some charge separation (usually because the molecule is polar).
Dipole-dipole force	When the positive end of a polar molecule becomes attracted to the negative end of another polar molecule.
Distillation	This is when you separate a mixture of liquids by heating it up.
Electron affinity	The energy change that accompanies the addition of an electron to an atom in the gas phase.
Electronegativity	A measurement of how much an atom tends to “steal” electrons from atoms that it's bonded to.
Electropositive	When something is not at all electronegative. In fact, it tends to lose electrons rather than to gain them.
Empirical formula	A reduced molecular formula.

Word	Definition
Endothermic	When a process absorbs energy (gets cold).
Energy level	A possible level of energy that an electron can have in an atom.
Enthalpy	A measurement of the energy content of a system.
Excited state	A higher energy level that electrons can jump to when energy is added.
Exothermic	When a process gives off energy (gets hot).
Ground state	The lowest energy state possible for an electron.
Half-life	The time required for half of the radioactive atoms in a sample to decay.
Halogen	The elements in group 17. They're really reactive.
Heat of reaction	The amount of heat absorbed or released in a reaction. Also called the "enthalpy of reaction."
Hess's Law	The enthalpy change for a change is the same whether it takes place in one big step or in many small ones.
Heterogeneous mixture	A mixture where the substances aren't equally distributed.
Homogeneous mixture	A mixture that looks really "smooth" because everything is mixed up really well.
Hund's rule	The most stable arrangement of electrons occurs when they're all unpaired.
Hydronium ion	The H+ ion.
Hydroxide ion	The OH- ion.
Immiscible	When two substances don't dissolve in each other.
Indicator	A compound that turns different colors at different pH values.
Insoluble	When something doesn't dissolve.
Intermolecular force	A force that exists between two different molecules.
Ionic bond	A bond formed when charge particles stick together.
Isotope	When an element has more than one possibility for the number of neutrons, these are called isotopes.
Kinetic energy	The energy due to the movement of an object.
Limiting reactant	The first chemical that gets used up in a chemical reaction.
London dispersion force	The forces between nonpolar atoms or molecules which is caused by momentary induced dipoles. It's real weak.
Lone pair	two electrons that aren't involved in chemical bonding.
Molarity	A unit of concentration equal to moles of solute divided by liters of solution.
Mole ratio	The ratio of moles of what you've been given in a reaction to what you want to find. Handy in stoichiometry.
Mole	6.02×10^{23} things.
Molecular compound	A compound held together by covalent bonds.
Molecular formula	A formula that shows the correct quantity of all of the atoms in a molecule.
Monatomic ion	An ion that has only one atom, like the chloride ion.
Neutralization reaction	The reaction of an acid with a base to form water and a salt.
Nonpolar covalent bond	A covalent bond where the electrons are shared equally between the two atoms.
Octet rule	All atoms want to be like the nearest noble gas.
Orbital	This is where the electrons in an atom can be found.

Word	Definition
Organic compound	A compound that contains carbon (except carbon dioxide, carbon monoxide, and carbonates).
Pauli exclusion principle	No two electrons in an atom can have the same quantum numbers.
Percent yield	The actual yield divided by the theoretical yield, times 100.
Phase diagram	A chart/graph which shows how the phase depends on various conditions of temperature and pressure.
Phase	The state of a compound (solid, liquid, or gas).
Physical property	A property which can be determined without changing something chemically.
Pi-bond	A double bond.
Polar covalent bond	A covalent bond where one atom tries to grab the electrons from the other one.
Polyatomic	Contains more than one atom.
Quantum theory	The branch of physical chemistry that describes how energy can only exist at certain levels and makes generalizations about how atoms behave from this assumption.
Saturated	When the maximum amount of solute is dissolved in a liquid
Semiconductor	A substance that conducts electricity poorly at room temperature, but has increasing conductivity at higher temperatures.
Shielding effect:	The outer electrons aren't pulled very tightly by the nucleus because the inner electrons repel them.
Sigma bond	single bond.
Significant figure	The number of digits in a number that tell you useful information.
Solubility	A measurement of how much of a solute can dissolve in a liquid.
Solute	The solid that gets dissolved in a solution.
Solvent	The liquid that dissolves the solid in a solution.
STP	Standard Temperature and Pressure (1 atmosphere and 273 K).
Strong acid	An acid that fully dissociates in water
Sublimation	When a solid changes directly into a gas.
Synthesis	When you make a big molecule from two or more smaller ones.
Theoretical yield	The amount of product which should be made in a chemical reaction if everything goes perfectly.
Titration	When the concentration of an acid or base is determined by neutralizing it.
Unsaturated	When you haven't yet dissolved all of the solute that's possible to dissolve in a liquid.
Unshared electron pair	two electrons that aren't involved in chemical bonding. Also frequently referred to as a "**lone pair**".
Valence electron	The outermost electrons in an atom.
Volatile	A substance with a high vapor pressure.
VSEPR	A theory for predicting molecular shapes that assumes that electrons like to be as far from each other as possible.