



Nova Classical Academy Chemistry Syllabus 2018-2019



Instructor

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Room 311

Course Description

Chemistry is the study of matter, energy, and change. Emphasis will be on problem-solving skills, the collection, recording, manipulation and analysis of experimental data, the design of experimental procedures, and the development of good lab techniques through familiarization with common laboratory equipment and practices.

Course Objectives/Quarterly Overview of Units

Sem	Unit	MN Standards	Topics (<i>and additional Honors topics</i>)
1	1: Intro to Matter	9.1.3.4.5, 9C.1.3.4.1, 9.2.1.2.4, 9C.2.1.4.1, 9.1.3.4.2, 9.1.3.4.4	• Lab safety; SI (metric) measurement; accuracy & precision; classifying matter
	2: Atomic Theory	9.2.1.1.2, 9.1.3.4.6, 9.2.1.1.1, 9.2.1.1.4, 9.1.3.4.3, 9C.2.1.1.1	• Historical development of evidence for atoms; atomic structure; isotopes; radioactivity; <i>calculating average atomic mass</i>
	3: Electrons and Bonding	9.2.1.1.3, 9C.2.1.1.2, HS-PS1-1, 9.2.1.2.1, 9C.2.1.2.1, 9C.2.1.2.2 HS-PS1-3, 9C.2.1.2.3	• Chemical periodicity and periodic trends; arrangement of electrons in atoms; bonding and compounds; shapes of molecules; intermolecular forces
	4: Formulas, Equations and Stoichiometry	9.2.1.2.2, 9.2.1.2.3, 9C.2.1.2.4, 9C.2.1.2.5, 9C.2.1.3.5, HS-PS1-7	• Counting atoms; chemical formulas; predicting reaction yield given specified amounts of reactants (or vice versa)
2	5: Chemical Reactions	9C.2.1.3.4, HS-PS1-2, 9C.2.1.3.1, 9C.2.1.3.2, 9.2.1.2.4, HS-PS1-4	• Simple chemical reactions; <i>oxidation-reduction reactions; electrochemistry</i>
	6: Thermal and Chemical Energy	9.2.1.2.4, 9C.2.1.4.2	• Energy changes in reactions, kinetic-molecular theory, states of matter, phase transitions, gas laws; <i>Hess's Law</i>
	7: Solutions, Acids and Bases	9C.2.1.2.6, 9C.2.1.2.7, 9C.1.3.3.1, 9C.2.1.3.3, HS-PS1-6	• Concentration and properties of solutions; the pH scale; acid-base neutralization reactions; <i>colligative properties of solutions; weak acids/bases</i>
	8: Kinetics and Equilibrium	9C.2.1.3.6, HS-PS1-5, 9C.2.1.3.7, HS-PS1-6	• Reaction rates; reversible reactions; Le Châtelier's principle; <i>equilibrium calculations; final project</i>
	9: Basic Organic Chemistry	n/a	• Nomenclature of organic compounds; functional groups

Book

Silberberg, M. (2010). *Chemistry* (5th ed.) McGraw-Hill.

Grading Policy

Category	%	Description
Tests	30	One per unit. Two retakes allowed.
Quizzes	20	1-3 per unit. Unlimited retakes allowed.
Lab work	30	Formal written reports will be required for some lab activities; some will be partial write-ups or graded on completion
Homework	10	See "Homework Policy" below
Academic skills	10	See "Classroom Conduct Expectations" below

Grading Scale

A+	above 97 %
A	93 - 97 %
A-	90 - 93 %
B+	87 - 90 %
B	83 - 87 %
B-	80 - 83 %
C+	77 - 80 %
C	73 - 77 %
C-	70 - 73 %
D+	67 - 70 %
D	63 - 67 %
D-	60 - 63 %
F	0 - 59 %

Homework Policy

Homework is generally worth 4 points per day and is graded solely on effort and completion (in other words, wrong answers still count as long as they reflect honest effort). On-time homework is checked in class by group leaders and should not be handed in to Mr. LB. Late homework may be turned in up to one day late for half credit. After one day, no points will be awarded. Excused absences are an exception; write "absent excused" on the paper and hand it in.

Lab Policy

You must have (1) a passing score (90%+) on the Lab Safety Quiz, and (2) a Lab Safety Contract signed by a parent/guardian on file to participate in lab work. Students may be dismissed from the lab at any time, without warning, for safety violations; and work missed as a result will earn a 0 with no retake opportunity.

Students who miss lab work due to unexcused absence are not allowed to make up that lab work. Students with excused absences, or who need additional time to complete lab work, may work in the lab outside of class. For safety and chemical hygiene reasons, **experiments will only be available 1 week past the last work day in class**. After this time, no make-ups are allowed for any reason. Lab reports, however, may still be corrected and resubmitted to earn a higher score.

Quizzes and Tests

All quizzes and tests are on the course website (lymanbuttler.com/nova), which can be accessed from anywhere (school, home computer, phones, etc.) **All quizzes and tests are cumulative**. Students are encouraged to seek help and retake quizzes and tests with less-than-satisfactory grades; I hope that this will promote a **growth mindset** and a culture of **continuous improvement** in the lab. Retakes will always consist of new problems on the same material. After the second attempt, you must wait 1 hour between attempts; this delay is meant to encourage you to review your notes, ask for help, etc. Tests (and first attempts on quizzes) are not open notes, but you may use the periodic table and formula sheet I provide (which you ARE allowed to write on before the test). Quiz retakes are "open notes" and may be completed anywhere and at any time, even from home. Class notes are posted on the website.

Classroom Conduct Expectations

- notebook, 3-ring binder, pencil, calculator
- NEVER throw away your papers!
- if anything is unclear, ASK
- follow Lab Safety Contract
- no food/gum (drinks in closed containers OK)
- no cell phones
- sit at assigned table, stay seated until bell
- follow directions the first time they're given

Your "Academic Skills" score is worth 10% of your grade. Points are awarded as follows:

<i>Conduct</i>	<i>Points</i>
On time to class	+3
Have all materials for the day on your table before the bell rings, without being asked	+2
Use independent work time productively (on task), or answer a question	+1
Socializing during work time, or missing materials	-1
Disrupting class	-2
Lab work not done on time	-3
Not cleaning up after yourself (trash, papers, lab supplies, chemicals left out, etc.)	-5
Lab safety violation (e.g. gum, food, horseplay, no goggles, etc.)	-5

"Mole Dollars" will be awarded for good citizenship, winning contests, outstanding contributions to class discussions, helping in the lab, etc. These may be used to buy stuff from the class store like pens, pencils, special privileges, etc.

Academic Honesty Policy

If you copy another student's work, both you AND the other student will earn a zero for that assignment and a bad conduct referral. The only time copying is ever acceptable is to share raw data when you are working together on an experiment. All other portions of the lab writeup must be your work alone. Every individual student will submit their own work separately—no "group papers" with multiple names. It IS acceptable for lab group members to collaborate or help each other calculate and interpret the results of experiments, but any writing must be original.

Please refer to the Nova Classical Academy "Cheating and Plagiarizing" policy for details.