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General Chemistry Syllabus

2018-2019

General Chemistry is an introductory survey course that exposes students to the atom, chemical bonding, inorganic nomenclature, chemical equations, stoichiometry, and types of chemical reactions. Success in this course requires hard work and dedication. I strongly recommend you to form study groups with your classmates. If you ever have questions, including homework questions and conceptual questions**, do not hesitate to ask me!**

Textbook: Dorin, Henry, Peter E. Demmin, and Dorothy L. Gabel. Prentice Hall Chemistry: The Study of Matter. Needham, MA: Prentice Hall, 1992.

Standards-Based Grading

I will be using Standards-Based Grading into this course. There are several reasons for this research-based[1] grading method, including:

- The qualitative differences between the grades A, B, C, D, and F are clarified for students and parents, reducing questions and confusion about grades
- More data is provided to me about student learning, allowing me to adjust instruction based on student learning
- Students focus shifts from grades to learning by providing students multiple opportunities to demonstrate proficiency in the standards
- Student grades are calculated based on final student proficiency, not an average of all grades earned during the quarter
- Student grades become much more consistent by reducing subjectivity and clarifying student objectives for learning
- Students are encouraged to develop a high level of critical-thinking skills, preparing them well for life after high school

Students will earn a score of from 0.0 – 4.0 for each objective in the course on an assessment[1]. Students will have one in-class assessment on each objective and will be allowed re-assessments only when showing proof of completed practice. Students must initiate each re-assessment. *MOODLE* online software will be used for all assessments in class. Remediation work will be done on paper and must be completed satisfactorily for the reassessment grade to count.

The student's ***highest score*** on every standard will be recorded for grading purposes.

Scale	Description
4.0	Student can demonstrate a complete understanding of all topics related to the standard. Student can also apply knowledge of the standard to situations not specifically described in class without any assistance.
3.0	Student can demonstrate a complete understanding of all topics related to the standard without any assistance.
2.0	With help student can demonstrate complete understanding of standard or student demonstrates partial understanding of standard without any help
1.0	With help student can demonstrate partial understanding of standard
0.0	Even with help, student cannot demonstrate any understanding of standard

Half-steps (3.5, 2.5, 1.5, 0.5) are earned for non-conceptual errors (algebra mistakes, calculator mistakes, etc.)

[1] Marzano, Robert J. *Formative Assessment & Standards-based Grading.* Bloomington, IN: Marzano Research Laboratory, 2010. Print.

Letter grades will still be assigned in this course each quarter, with the semester grades resulting in awarding of credit and remaining on the student's transcript. ***Standards-Based Grading of Content Objectives will be worth 50% of the overall grade.*** The following qualitative definitions of grades will be used in this course, and are based on Marzano's research:

Letter Grade	Standard Average	Letter Grade	Standard Average
A+	4.0	C	2.50 - 2.64
A	3.60 - 3.99	C-	2.40 - 2.49
A-	3.40 - 3.59	D+	2.30 - 2.39
B+	3.20 - 3.39	D	2.15 - 2.29
B	3.00 - 3.19	D-	2.00 – 2.14
B-	2.80 - 2.99	F	0 – 1.99
C+	2.65 - 2.79		

Grades will be calculated using the following weights:

Standards-Based Content Objectives	50%
Standards-Based Laboratory Objectives	20%
Summative Assessments	15%
Midterm/Final Exam	15%

Summative Assessments and Midterm/Final Exams will be standards-based and completed in class. Summative Assessments will allow for one retake per standard to be initiated by the student.

Letter grades will be assigned according to the percentages listed above.

Feel free to contact me if you have questions. E-mail is preferred.

Teacher:	Mr. Hamm	**E-mail:**	andyha@boyceville.k12.wi.us
School Phone:	715-643-3647 x432	**Website:**	http://www.boycevillescience.com

Mr. Hamm is available for student questions and assistance before school by appointment from 7:30 - 8:05 as well as during his advertised preparation period. Appointments are encouraged because this is also the time where Mr. Hamm will be preparing for classes, including making copies and creating other instructional materials, meeting administrative requirements, contacting parents, and examining new technologies and classroom materials. Daily intervention time is also an opportunity for student assistance. Mr. Hamm is also available during lunch by appointment. After school appointments are difficult to schedule due to conflicting work, coaching, and other responsibilities that Mr. Hamm has.

Attendance Expectations

Regular attendance is **very important** to success in this course. Please do your best to attend class every day. If you cannot attend class, please get any notes missed from a friend or the class website and copy them into your notebook as soon as possible. ***Students must be seated in their seats and ready to learn when the bell rings or they will be marked tardy*** and will be disciplined starting at step one and increasing steps for every subsequent unexcused tardy.

Students that miss an assessment due to an excused absence must make the assessment up on their own time within two days of returning to class. Failure to make up the assessment will result in a loss of the first opportunity to demonstrate

mastery of the objectives and will result in the student needing to complete the practice assignments and complete a re-assessment.

Classroom Behavior Expectations

- Respect everyone, including the teacher, other teachers, staff, administrators, other students, and yourself *at all times*.
- Put forth your best effort *at all times.*
- Ask questions if you are confused, need something clarified, or seek help…I am here to help!

Specific Classroom Rules

- Raise your hand to talk and respect others while they talk, including the teacher.
- This class is not your nap time. Please refrain from sleeping *at all times.*
- Cheating is **not tolerated under any circumstances** and will result in an automatic zero and referral under the district/school policy. Talking is **not allowed** during assessments.
- Please come to class prepared to learn *every day*. This includes bringing a pencil, a notebook, your textbook, your folder/binder, and any completed practice. ***You will not be allowed to go to your locker if you forget anything.***
- Students on the weekly detention list are not allowed to leave the classroom.
- Stay on task! If you are given time to work on practice, then work on practice. If you should be taking notes, then take notes. If you have a question, ask Mr. Hamm! Come to class on time. You must be seated in your seat ready to learn when the bell rings or you will be marked tardy. Unexcused tardiness will not be tolerated.
- The tools available in the classroom are for everyone's use. Please do not remove anything from the classroom without Mr. Hamm's permission.
- Keep your area clean. You are asked to clean your area at the end of the period and make sure that it at least as clean as it was when you arrived.
- Keep your cell phone out of the room or packed away. I don't want to see it!
- Be respectful to substitute instructors. Any students who cause problems for a substitute teacher will automatically escalate to step 2.

Classroom Consequences

Step 1: You will serve 30 minutes with Mr. Hamm before school. You will lose all pass privileges for the remainder of the quarter and must remain in the classroom for the entire period.

Step 2: You will serve 60 minutes of detention with Mr. Hamm before school. Additionally, your parents will be contacted regarding your behavior. Failure to serve your time results in an escalation to Step 3.

Step 3: You will be required to attend a parent/student/teacher conference to discuss your behavior and the options available to you to improve your behavior. This conference will be set up after your parents have been contacted and will be completed as soon as possible. A Behavior Improvement Plan will be designed during this conference. Failure to adhere to the plan will result in an escalation to Step 4

Step 4: You will be referred to the appropriate administrator and your parents will be contacted and informed that you have violated the plan. Significant violations will immediately escalate to step 4. All further disciplinary action will be handled by the appropriate administrator and the instructor.

Positive behavior will be rewarded in a variety of ways, which will be communicated to students each quarter. Students with no disciplinary actions in class each quarter will be eligible for the positive behavior rewards. Disciplinary actions in regards to positive behavior will be reset every quarter.

Laboratory Expectations

All laboratory reports will be written in pen in a composition-style notebook, with writing on only one side of each page. These lab reports will be graded according to the rubric that students will be provided with at the beginning of the course. There is a sample laboratory activity in the lab manuals that students are given at the beginning of the course.

Safety is the most important concern in the laboratory environment and unsafe actions or procedures will be corrected immediately. Horseplay in the lab will not be tolerated and will be resolved immediately and repeated issues may result in the removal of the student from the course.

Electronic Device Expectations

Possession and/or use of a cell phone is not required or needed to complete the math curriculum at Boyceville High School. Students are expected to keep their phones and other small personal electronic devices in their locker unless prior approval is obtained from the instructor and all electronic devices must be registered according to school policy. Any student in violation of this policy will have their phone taken away and the student handbook guidelines will be applied.

Laptops, IPADs, and other tablets or similar (non-small) electronic devices may be used throughout the year in class. Any student wishing to use personal electronic devices must have the approval of the instructor before they will be allowed to be used in class and these devices must be registered according to school policy.

Resource Expectations

The following materials will be needed for this course:

- One two-inch binder or larger for handouts and assignments
- One 70-page spiral notebook for note-taking
- White loose-leaf paper for assignments
- A scientific calculator though a graphing calculator (TI-83 or similar) is highly recommended
- Several pens for writing laboratory reports
- A composition-style notebook for laboratory reports
- Several pencils for completing assessments, taking notes, and completing practice assignments.

General Course Timeline Expectations

The content and laboratory practice standards for this course are listed on the coming pages. Below is a tentative timeline for standards per quarter

Quarter 1: Standards 1.1 - 2.8 and Lab Standards L1 - L5
Quarter 2: Standards 3.1 - 6.7 and Lab Standards L6 - L8
Quarter 3: Standards 7.1 - 9.9 and Lab Standards L9 - L11
Quarter 4: Standards 10.1 - 12.8 and Lab Standards L12 - L20

General Chemistry Standards

1.1	Identify proper safety procedures in the laboratory
1.2	Identify and use proper tools and equipment in the laboratory
1.3	Differentiate between qualitative and quantitative data
1.4	Convert measurements among the metric units
1.5	Identify the appropriate measuring device for a specific problem and count the number of significant figures in a measurement
1.6	Differentiate between accuracy and precision
1.7	Convert numbers to and from scientific notation maintaining the prevision of the measurement
1.8	Convert measurements using dimensional analysis
1.9	Round numbers to the correct number of significant figures
1.10	Add and subtract numbers maintaining the precision of the measurement
1.11	Multiply and divide numbers maintaining the precision of the measurement
1.12	Identify and differentiate among the seven diatomic molecules
1.13	Differentiate between physical and chemical properties and changes
1.14	Distinguish among a mixture, compound, and a pure substance
1.15	Explain the states of matter in terms of particles
1.16	Classify mixtures as homogeneous or heterogeneous
1.17	Relate the atomic symbols with their correct atomic name
1.18	Calculate the density of a substance
2.1	Compute how heat energy added to a substance will change the substance's temperature
2.2	Apply the definition of heat to the molecular level
2.3	Identify phase changes and calculate the energy needed to change a phase
2.4	Differentiate among the different types of energy
2.5	Calculate the speed, wavelength, and frequency of electromagnetic radiation
2.6	Differentiate among different types of electromagnetic radiation
2.7	Identify the significance of the various outcomes of Thomson's and Rutherford's experiments

2.8	Identify the charge, mass, and location of the three subatomic particles
2.9	Calculate the atomic mass of a given sample with a given percent abundance, and vice versa
3.1	Write the electron configuration of various atoms
3.2	Write the electron configuration of various ions
3.3	Using Aufbau's Principle and Hund's Rule, assign electrons to main energy levels and write energy level diagrams for atoms and ions
4.1	Use the modern Periodic Table to predict an element's chemical and physical properties
4.2	Define atomic radii, ionic radii, ionization energy, electron affinity, and electronegativity in terms of the Periodic Table
4.3	Define valence electrons and determine the number of valence electrons for any main group elements
5.1	Define a chemical bond and calculate the electronegativity difference to determine bond type and polarity
5.2	Use the octet rule to write Lewis structures for compounds
5.3	Determine whether a given chemical is an ionic, covalent, or metallic compound
5.4	Distinguish between ionic and molecular properties
5.5	Identify and describe the metallic properties of conductivity, malleability, ductility, and luster
5.6	Differentiate how electrons behave in ionic, covalent, and metallic compounds
5.7	Use VSEPR theory to describe the geometric shape of molecules
5.8	Differentiate among dipole-dipole forces, ion-dipole forces, hydrogen bonding, and london dispersion forces
5.9	Arrange a group of chemicals in order of increasing freezing or boiling point by considering intermolecular forces
6.1	Identify the oxidation number for an element or polyatomic ion and write the correct formula for the ion and vice versa
6.2	Use the rules for assigning oxidation numbers to determine the formula for an ionic compound from its chemical name
6.3	Name ionic compounds from given chemical formulas
6.4	Write molecular formulas from the names and numbers of the atoms present
6.5	Name molecular compounds from given chemical formulas
6.6	Use oxidation numbers to name compounds and write formulas involving transition ions using the Stock System
6.7	Determine the name of an acid from a formula and derive the formula of an acid from its name
7.1	Use Avogadro's number to differentiate between number of molecules and a mole of a substance
7.2	Use the Periodic Table to calculate the molar mass of a substance
7.3	Use molar mass to differentiate among mass and a mole of a substance
7.4	Use molar mass to calculate the percent composition of a substance
7.5	Identify a compound's empirical formula and calculate the molecular formula from the empirical formula and other data
8.1	Correctly write a formula equation from a word equation and vice versa
8.2	Balance chemical equations
8.3	Identify and differentiate among synthesis, decomposition, single-replacement, double-replacement, and combustion reactions
8.4	Predict the products for each type of chemical reaction

8.5	Use mole ratios and dimensional analysis to solve stoichiometry problems
8.6	Use stoichiometry to determine the limiting reactant of a reaction
8.7	Use the limiting reactant to determine the amount of product and calculate percent yield
8.8	Complete net ionic equations and identify spectator ions
8.9	Define and differentiate between exothermic and endothermic chemical reactions
9.1	Use the Kinetic Molecular Theory of Matter to identify behaviors of real and ideal gases
9.2	Relate the pressure of a gas to the force exerted
9.3	Differentiate among various units of pressure
9.4	Use standard temperature and pressure to solve stoichiometric problems
9.5	Use the Combined Gas Law to solve for a gases volume, pressure, or temperature
9.6	Use Dalton's Law of Partial Pressures to describe different mixed-gas situations
9.7	Using the Ideal Gas Law, calculate a gases volume, pressure, temperature, or amount.
9.8	Define boiling in terms of equilibrium vapor pressure
9.9	Use the ideal gas law and stoichiometry to solve application problems.
10.1	Differentiate between the solute and solvent in a solution and compare electrolytes to nonelectrolytes
10.2	Describe how changing the pressure, temperature, or surface area of a solution/solute will affect the rate of dissolution
10.3	Differentiate among unsaturated, saturated, and supersaturated solutions
10.4	Calculate how many grams of a solute are needed to make a saturated solution
10.5	Calculate the molarity of a solution with given solute and solvent
10.6	Dilute a given solution from one concentration to a weaker concentration
10.7	Calculate other measures of solution concentration, including ppt, ppm, and ppb
10.8	Use molarity to make stoichiometric calculations
11.1	Calculate the equilibrium constant for a reversible chemical reaction
11.2	Calculate the reaction quotient for a given time and a given chemical reaction and compare it to the equilibrium constant
11.3	Predict how specific stresses, including temperature, pressure, and change in concentration, will affect a chemical system at equilibrium according to Le Chatelier's Principle
12.1	Classify a compound as an Arrhenius Acid or Base
12.2	Classify a compound as a Bronsted-Lowry Acid or Base
12.3	Identify the six strong acids
12.4	Label conjugate acid-base pairs
12.5	Determine the products of an acid-base neutralization reaction
12.6	Calculate the pH of strong acid and strong base solutions
12.7	Calculate the pH of weak acid and weak base solutions
12.8	Identify common indicators and the pH range they are used for
L1	Use Vernier Logger-Pro to make graphs and lines/curves of best fit

L2	Experimentally observe and describe chemical changes
L3	Experimentally determine the density of various objects to at least three signficant figures of precision
L4	Use Vernier Logger-Pro with Temperature Sensors to graph temperature data
L5	Experimentally determine the specific heat of a given substance
L6	Use ball-and-stick models to determine the geometric shape of various molecules
L7	Use experimental procedures (qualitative analysis) to identify various unknown chemical substances
L8	Experimentally create, compare, and contast exothermic and endothermic chemical reactions
L9	Experimentally determine the percent yield for a given chemical reaction
L10	Experimentally determine the heat of fusion for ice
L11	Experimentally determine the value for absolute zero using a Gas Pressure sensor
L12	Experimentally determine the effect of temperature on the solubility of a salt
L13	Experimentally determine the concentration of unknown salt solutions using a titration
L14	Use Vernier Logger-Pro with Colorimeters to graph colorimetry data
L15	Experimentally determine the equilibrium constant for a given reaction using a colorimeter
L16	Experimentally determine how equilibrium and stresses can affect the color of a chemical reaction
L17	Experimentally investigate and describe the titration curves of strong and weak acids and bases
L18	Experimentally and qualitatively determine the difference among solutions of an acid, base, indicator, and water
L19	Apply the methods of Experimental Design to conduct, design, and report the findings of a one-factor experiment

Please complete, detach, and return this portion of the Course Syllabus to Mr. Hamm

I have read the Course Syllabus and pledge to give my best effort.

_____

Student Printed Name Student Signature Date

I have read the Course Syllabus and will contact Mr. Hamm if I have any questions.

_____

Parent/Guardian Printed Name Parent/Guardian Signature Date