

Shippensburg Area Senior High School

Syllabus/Expectations

Course: Chemistry (403)

Prerequisite: Algebra I with a minimum final grade of a “B” average.

Course Description: Chemistry will review the methods of physical science in the laboratory with an emphasis on measurement, scientific notation, uncertainty and units. Content emphasis will be placed in understanding the composition, properties and reactions of matter, chemical nomenclature, stoichiometry and chemical equations, the periodic table, the atomic structure of matter, energy transformations and bonding. Laboratory experiments are integral components of the course. Applications to environmental issues and everyday life will be included.

Required materials:

Chemistry Notebook: A notebook used for chemistry only. A three-ring binder is recommended due to the amount of notes you will receive.

Calculator: A scientific calculator will be required. A graphing calculator is not necessary, but may be used if required by your math class.

Textbook: Introductory Chemistry: A Foundation, 6th Edition (Zumdahl)

"Anyone who has never made a mistake has never tried anything new."

"I have no special talent. I am only passionately curious."

"Logic will get you from A to B. Imagination will take you everywhere."

Albert Einstein

Course Expectations/Classroom Management: I have high expectation for every student in this course. This is an upper level science course and I expect students to come to class prepared, homework completed, to take good notes, participate in class discussions, ask questions, and safely perform quality laboratory work. You are expected to respect all members of the class and your teacher. I will further review my classroom expectations on the first day of school.

1. As young adults, I expect students to follow the rules and guidelines in the student handbook. The student handbook will be enforced in the classroom.
2. All students will treat each other and the teacher with respect.
3. Students will have their textbook, notes, calculators on their desk and ready to learn when the bell rings. All other materials shall be placed under your desk seat.
4. Students may not leave the classroom without teacher permission. Students must sign out and obtain a pass before leaving the classroom.
5. Students are expected to use the bathroom during flex periods, study hall, or during lunch. However, I typically allow students to use the bathroom when requested – at least until this privilege becomes abused.
6. If a student is late for class, the late sign-in sheet must be signed. The district policy for late to class discipline will be followed in the classroom.

7. Glassware and equipment in the chemistry laboratory is expensive. It is important that it be treated with care. The motto, "If you break it, you buy it", will be followed in the laboratory. All laboratory glassware and equipment will be cleaned and returned to its proper location. If a student fails to use the equipment properly, they will be removed from the laboratory. *Horseplay will not be tolerated in the laboratory.*
8. Become familiar with the School District policy on plagiarism and cheating.
9. I recognize that students are very busy with their studies and after-school activities. Therefore, to avoid disciplinary issues that will make further demands on your time, follow the student handbook. If classroom discipline is necessary, the following procedure will be utilized: First disruption will result in a warning; Second disruption will consist of a student/teacher discussion, with possible parental contact; Third occurrence will lead to an office referral. Teacher reserves the right to skip any steps depending upon specific issues and to utilize creative activities for classroom detention.

Student Expectations:

1. **Preparation** – Students should be prepared for class each day, having textbooks, handouts, paper, writing instruments, and scientific calculators.
2. **Homework** – Homework will be assigned almost every day. If you want to be successful in chemistry – complete your homework every day. Chemistry basics learned at the beginning of the year will be needed throughout the year. Solutions to the assigned homework problems have been posted in Google Apps for Education for students to reference.
3. **Timeliness** – Students are expected to hand in work by its due date in class and not at the end of the day. A penalty of 10% will be deducted for each day the assignment is turned in late. Work that is more than five days late without a valid excuse will receive a zero.
4. **Absences** – Students are expected to complete all work that is missed during absences. This includes laboratory work. Students are responsible for finding out what was missed and making appointments with the teacher to make up laboratory work.
5. **Grading** – Grades are computed as the percentage of total points earned each quarter. However, the approximate breakdown of points is as follows:
 - a. Tests - 50%
 - b. Laboratory reports – 30%
 - c. Quizzes – 20%

There will be a quiz every Friday. The quiz consists of problems taken from the preceding week's assigned homework. In an effort to encourage students to complete the homework and to utilize the Thursday tutoring sessions (if help is needed), students will have the opportunity to take one test over prior to the end of the semester. The student must have a quiz grade of a B or higher in order to be given this opportunity. Details to be provided in class.

6. **Laboratory work** – Students are responsible for following rules of safe conduct in the laboratory. Horseplay in the laboratory or other infractions may result in a student's removal from the laboratory. Students are required to keep a bound composition notebook. All lab work will be recorded in the lab notebook. Unless otherwise announced, your laboratory notebook will be collected for review.

7. **Tests** – Any material covered in the course, to include laboratory work, may be used on tests. Midterm and final exams are cumulative for each semester. Tests will usually consist of multiple choice, short answer, and written problem questions. Students who are absent the day of the test have five days to complete the exam. Tests not completed within five days of returning to school will be given a zero.
8. **Quizzes** – A quiz will be given every Friday consisting of one or two questions from the week's assigned homework.
9. **Extra Credit** – Challenging extra credit questions derived from your homework are typically given at the end of each test. *There are no extra credit projects.*
10. **Extra Help** – Chemistry basics learned at the beginning of the year will be needed throughout the year. Please come for help before or after school. If possible, it is best to make an appointment so I know you are coming. Assistance early in the year will help you succeed as the year progresses!!!
11. **Seating** – Students will be assigned seats to assist the teacher in learning names. Seating may be changed on an as needed basis or if student behavior warrants it.

Topic Outline:

TOPIC	LABS & STUDENT ACTIVITIES
<p>CH1: Chemistry: An Introduction What is chemistry? The scientific method</p> <p>CH2: Measurements and Calculations Scientific Notation Units of measure and the SI system Measurement of length, volume, and mass Uncertainty in measurement Significant Figures Precision vs. Accuracy and Significant Figures Dimensional analysis Temperature Conversions Density</p> <ul style="list-style-type: none">✓ Quiz✓ Test: CH1 and CH2 combined	<p>Labs and Activities:</p> <ol style="list-style-type: none">1. The Scientific Method and Eggs2. Glassware familiarization Exercise3. Uncertainty in measurement4. Use of the Ohaus Dial-O-Gram balance5. Safety in the Laboratory6. Accuracy & Precision in Measurement7. Temperature Conversions8. Basic Lab Measurements – Measuring Mass, Length, Volume, and Temperature9. Density: The Relationship between Mass and Volume
<p>CH3: Matter Matter Organization and Use of the Laboratory Notebook Physical and chemical properties and changes Mixtures and Pure Substances Separation of Mixtures</p> <ul style="list-style-type: none">✓ Test: CH3	<p>Labs and Activities:</p> <ol style="list-style-type: none">1. Chemical & Physical Changes Practical Exercise2. Identifying samples and Compounds, Elements, or Mixtures3. Separation of Mixtures investigation
<p>CH4: Chemical Foundations: Elements, Atoms, and Ions The elements and their symbols Dalton's Atomic Theory The Structure of the Atom Introduction to the Modern Concept of Atomic Structure Isotopes Introduction to the Periodic Table Natural States of the Elements Ions Compounds that contain ions</p> <ul style="list-style-type: none">✓ Quiz✓ Test: CH4	<p>Labs and Activities:</p> <ol style="list-style-type: none">1. Learning the elements and the game of BLUFF2. Law of Definite Proportions Analogy using Paper Clips3. Gold Foil Practical Exercise4. Atomic Structure – A Journey into the Atom – Isotopes5. Creating Your Own Periodic Table Practical Exercise6. Blank Periodic Table and Colored Pencils Activity7. Producing Ions using “Protons” and “Electrons”8. Ionic or molecular compound identification

<p>CH5: Nomenclature Naming Compounds Naming Binary Compounds that Contain a Metal and a Nonmetal Naming Binary Compounds That Contain Only Nonmetals Naming Binary Compounds: A Review Naming Compounds that Contain Polyatomic Ions Naming Acids Writing Formulas from Names ✓ Quiz ✓ Test: CH5</p>	<p>Labs and Activities: 1. Chemical Nomenclature Rummy 2. Determining the Accuracy of the Nomenclature of Selected Chemicals from the Storage Room 3. Compound Naming Race 4. Chemical Nomenclature and Sweet 16 Basketball Bracket</p>
<p>CH6: Chemical Reactions: An Introduction Evidence for a Chemical Reaction Chemical Equations Balancing Chemical Equations ✓ Test: CH6</p>	<p>Labs and Activities: 1. Evidence of a Chemical Reaction 2. Law of Conservation of Mass investigation 3. Use and Operation of the Bunsen Burner</p>
<p>CH7: Reactions in Aqueous Solutions Predicting whether a reaction will occur Reactions in Which a Solid Forms Describing Reactions in Aqueous solutions Reactions that Form Water: Acids and Bases Reactions of Metals and Nonmetals (redox) Ways to Classify Reactions Other Ways to Classify Reactions ✓ Quiz ✓ Test: CH7</p>	<p>Labs and Activities: 1. Colorful Precipitates 2. Practical Activity – Identification of Species being oxidized and reduced in a Redox reaction 3. Classifying Reactions 4. Determination of the Percent Oxygen in Potassium Chlorate</p>
<p>CH8: Chemical Composition Counting by Weighing Atomic Masses: Counting Atoms by Weighing The Mole Molar Mass Percent Composition of Compounds Formulas of Compounds Calculation of the Empirical Formulas Calculation of Molecular Formulas ✓ Quiz ✓ Test: CH8</p>	<p>Labs and Activities: 1. Counting by Weighing by using Nails 2. Determination of Avogadro's Number 3. Relating Moles to Molar Mass 4. Determining an Empirical Formula</p>

Mid-Term Examination	Test: Chapters 1-8
CH9: Chemical Quantities Information given by Chemical Equations Mole-Mole Relationships Mass Calculations Calculations Involving a Limiting Reagent Percent Yield ✓ <i>Quiz</i> ✓ <i>Test: CH9</i>	Labs and Activities: 1. Relating Moles to Coefficients of a Chemical Equation 2. Limiting Reactants: The Stoichiometry of S'Mores 3. Limiting Reactants: The Reaction between Vinegar and Baking Soda 4. Stoichiometry and Percent Yield
CH10: Energy The Nature of Energy Temperature and Heat Exothermic and Endothermic Processes Measuring Energy Changes ✓ <i>Test: CH10</i>	Labs and Activities: 1. Exploring Energy Changes – Exothermic and Endothermic Reactions 2. Soda Can Calorimeter – Energy Content of Food
CH11: Modern Atomic Theory Rutherford's Atom Electromagnetic Radiation Emission of Energy by Atoms The Energy Levels of Hydrogen The Bohr Model of the Atom The Wave Mechanical Model of the Atom The Hydrogen Orbitals The Wave Mechanical Model: Further Development Electron Arrangements in the First 18 Atoms on the Periodic Table Electron Configurations and the Periodic Table Atomic Properties and the Periodic Table ✓ <i>Quiz</i> ✓ <i>Test: CH11</i>	Labs and Activities: 1. Flame Tests: Atomic Emission and Electron Energy Levels 2. Atomic Spectra: Light, Energy, and Electron Structure 3. Quantum Leap Lab: Probability and Electron Structure 4. How Electrons Determine Chemical Behavior 5. Sublevel Orbitals of the Atom Activity 6. Electron Configuration Bingo
CH 12: Chemical Bonding Electronegativity and types of bonds Bond polarity Lewis structures and the VSEPR model ✓ <i>Quiz</i> ✓ <i>Test: CH12</i>	Labs and Activities: 1. Models of covalent molecules
Final Examination	Test: Chapters 9-12

I have read the syllabus/course expectations for Chemistry

Block: _____

Date: _____

Student Name (print): _____

Student Signature: _____



Date: _____

Parent/Guardian Name (print): _____

Parent/Guardian Signature: _____

Parents, please indicate any questions or concerns you might have about chemistry in the space below or feel free to email me at john.kasarda@ship.k12.pa.us.

