

Integrated Chemistry & Physics 2008/09

Mr. B. Casher

Mr. C. Shang

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Integrated Chemistry and Physics is designed to foster a lifelong love of learning and inquiry that is integral in the philosophy behind the scientific method. Experimental and inquiry approaches to problem solving will be emphasized. Students will become familiar with the scientific method through studies in basic Chemistry and Physics.

Unit Topics	Class/Laboratory Activities
I. <i>Tools of Science:</i> measurement and conversions in the SI system, basic concept of significant digits, certainty, precision and accuracy, introduction to dimensional analysis, lab safety	Introduction to the laboratory environment
II. <i>Introduction to Chemistry:</i> the periodic table, IUPAC rules for naming elements, ions (simple and polyatomic), binary molecular compounds and ionic compounds.	Identifying properties of metals and non-metals, properties of ionic and molecular compounds, identifying unknown substances on the basis of physical and chemical properties.
III. <i>Chemical Reactions:</i> Writing word and chemical equations, predicting the products of simple formation, decomposition, single-replacement, double replacement and hydrocarbon combustion reactions. Simple solubility rules and diagnostic tests will be examined. Acids and bases will be examined.	Identifying reaction types, identifying products based on solubility rules and diagnostic tests for oxygen, carbon dioxide and hydrogen
IV. <i>The Chemistry of Life:</i> the properties of water, introductory biochemistry, the molecules of life (carbohydrates, lipids, proteins, nucleic acids and their monomers)	Water lab, Foods lab
V. <i>Motion, Forces, Energy:</i> investigations of kinematics, Newton's Laws, Universal Gravitation, conservation of energy and thermodynamics.	Friction Labs, Force Meters and Ticker Tape Labs Making a Rube-Goldberg machine
VI. <i>Waves, Sound and Light:</i> wave characteristics will be examined mathematically (amplitude, wavelength, frequency and period). The applications of sound and light waves will be examined through case studies	Making waves, diffraction gratings
VII. <i>Electricity:</i> electrical charges, forces and fields will be studied. Current, potential difference, resistance, conductors, insulators, semiconductors and superconductors will be examined. Practical applications of electricity in circuits will be examined	Circuit board labs

Teachers: Mr. Shang, Mr. Casher, Mr. Santowski

Notes:

1. The following materials or supplies are **REQUIRED**: scientific calculator, ruler/straight edge, mechanical pencil, geometry set (including curves), and graph paper. Graphing calculators are **NOT** allowed during tests, exams and quizzes.
2. All graphing is to be done on graph paper, even those graphs transferred from graphing calculators.
4. The course work grade is compiled from a collection of student work throughout each semester. It may include homework checks, “lecture” notes, text questions, oral defenses, corrected tests, assignments, labs, projects, reviews, class preparation/organization, etc. as a portfolio. Some labs may be collected independently.
5. Reading (or pre-reading) of material will often be assigned. It can provide an important insight into material covered in class. Science uses a specific language and students will be responsible for knowing vocabulary, terms and definitions. It will be included as test material.
6. Quizzes are considered part of the learning process and will be returned to students. Please keep these to help study for exams/tests. Exams/tests will not be returned.
7. Any special activities or field trips may involve additional costs to the student
8. Success requires perseverance, patience and a positive attitude. Studies show that regular review is paramount to success. Daily reviews of 15 - 30 minutes and weekly reviews of 45 minutes are suggested. If you feel discouraged, don't give up! Feel free to seek extra help.
9. Assignments and test dates are posted on NVS Blackboard and it is expected that students will check this daily.

Course Goals: The goal of this course is to allow students to gain the necessary skills to succeed in the array of science courses from which they may choose the following year. Significant time will be spent in the laboratory and on gaining fluency in writing lab reports.

Homework: Homework quizzes constitute short 5 – 10 minute quizzes which test **BASIC** material covered in homework or reading assignments. Pre-lab reading may also be assessed in this manner. Homework quizzes are taken after the homework from the previous day has been reviewed/corrected.

Behavior: Please contribute positively to the learning and classroom environment. **Be on time; be prepared; respect others.** Safety is essential in the laboratory. Follow instructions and use common sense. Class participation, safety, organization and preparation will be reflected in portfolio grade and deductions may occur (i.e.

continually forgetting calculator, tardiness...). Ultimately, the student is responsible for his or her own learning. Please do your best.

Attendance: Students shall follow normal school procedure for lates and absences. You are responsible for all work, INCLUDING LAB EXPERIMENTS, assigned during an absence. If a student is absent on the date a lab or assignment is due, please submit it upon returning to school. If a student is absent for a quiz/test, he/she must make arrangements for a make-up test (i.e. study hall). No class time will be provided for make-up tests.

Late Work: Late work will not be accepted. Exceptions may be made only in extraordinary circumstances at the teacher's discretion.

Marking: **Class Mark is calculated according to this formula:**

Quizzes/Tests: 50%

Practicals (lab reports, projects, papers etc.): 30%

Homework Quizzes: 20%

Note: The balance of the semester grade factors in a cumulative semester final exam

Class Work: 80%

Semester Exam: 20%

Extra help: Will be scheduled as needed. Extra help at lunch or after school is also available but must be scheduled in advance.

Text Book: Prentice Hall Physical Science: Concepts in Physical Science
Many supplementary materials will also be provided

Communication:

Please feel free to contact me and discuss any concerns that you or your parents have. Parents will be contacted to discuss academic, behavioral or other concerns.

Daytime: 499 – 1100

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