*“I have been impressed with the urgency of doing. Knowing is not enough; we must apply. Being willing is not enough; we must do.” – Leonardo da Vinci*

**Chemistry Course Syllabus**



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**Mr. Itow**

***Da Vinci Design***

**Course Description**

Chemistry at Da Vinci is a hands-on, inquiry-based science course that will incorporate design components through projects throughout the year. Most course work will be done within the context of a project. Students will present their projects and creations in exhibitions, as well as Presentations of Learning throughout the year, where they will show knowledge and application with real world skills in the subject area.

***Topics of study include, but are not limited to…***

* *The Metric System*
* *The Scientific Method*
* *Gases and their Properties*
* *Atomic Structure*
* *Nuclear Chemistry*
* *The Periodic Table*
* *Chemical Bonding*
* *Chemical Reactions*
* *The Mole & Stoichiometry*
* *Solutions*
* *Acids & Bases*
* *Thermodynamics*

**Everyday Information**

**MATERIALS:**

To be prepared for class, students should obtain:

1. Pencils and an eraser (only work in pencil is accepted)
2. A green or blue pen for correcting assignments.
3. Chemistry binder or section of a binder. (at least 1.5-inch in size).
4. Loose leaf paper for their 3-ring chemistry binder (or binder section).
5. Dividers (At least five)

**Binder Organization**

Organization is the key to success. Binders must be organized according to the following method with dividers separating each section.

1. Warm-ups and loose leaf paper.
2. Syllabus and notes.
3. Homework (current and graded HW).
4. Assessments and test reflections.
5. Vocabulary sheets.

## Classroom Rules & Expectations

Be ***respectful*** to others.

Be ***on time***.

Be ***prepared*** for class.

Be ***responsible*** for your actions.

Be ***positive!***

***Get involved***!

***ABSOLUTELY NO*** cell phones or electronic devices are to be used during class time unless otherwise specified. They are to be shut off and put away, out of sight. If they are visible, they will be taken and returned at the end of the day. Repeat offenders will need to have a parent or guardian pick up the phone at the front office. Please reference the 10th Grade Policies & Procedures handout for more information.

***CHEATING AND PLAGIARISM WILL NOT BE TOLERATED! Be yourself!*** Be proud of the work that ***you*** can produce and strive to better yourself as both a student and an individual in our school community!

**Mastery-Based Grading**

This year at Da Vinci, we will be using Mastery-Based Grading. Students’ grades will be based mainly upon their knowledge that correlates to the essential Chemistry knowledge and skills (80%), as well as their usage of the Da Vinci Habits of Mind: Accountability, Collaboration, and Quality (20%).

Each student is responsible to meet all course requirements, including class participation, homework, quizzes, tests, teamwork, and projects. Several methods of assessment will be used during all semesters. Students’ projects will be graded on both an individual and group basis when applicable.

*\*\*\*Note: Any grade lower than a C- is considered not passing (incomplete) at Da Vinci. A student that receives a grade lower than a C- will be responsible for completing summer school, additional classes or special assignments and work to complete the class for credit.*

**Re-do Policy**

Students are able to re-do assessments and projects **once.** Students have **one week** from the day the assessment or project has been returned to them to complete the makeup assessment or project (re-do assessments must be completed during office hours: not during class time). **It is the students’ responsibility to schedule the make-up time with the teacher.**

*Note: Students will always know at least a week in advance, if not more, the definite date of an assessment or project due date.*

**10th Grade Policies & Procedures**

Please refer to the 10th Grade Policies & Procedures handout for information regarding late work, absences, grade-level intervention, and other policies/procedures.

**Chemistry Essential Skills and Knowledge**

**Semester 1 Plan**

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| **Unit 0: Intro to Chemistry/Measurements** |
| **Essential Skills & Knowledge*** 0.a Students will be able to identify the vision, goal, procedures, and expectations of this class.
* 0.b SWBAT annotate texts to identify prior knowledge and key points.
* 0.c SWBAT apply fundamental math skills (fractions, long division, and powers of ten).
* 0.d SWBAT describe and apply the steps of the scientific method.
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| **Unit 1: Gases and their Properties** |
| **Essential Skills & Knowledge*** 1.a Students will be able to explain the effects of random molecular motion of molecules in a gas.
* 1.b SWBAT apply the gas laws to relationships between the pressure, temperature, and volume of any amount of an ideal gas or any mixture of ideal gases.
* 1.c SWBAT explain the values and meanings of standard temperature and pressure.
* 1.d SWBAT explain the Celsius and Kelvin temperature scales.
* 1.e SWBAT solve problems by using the ideal gas law in the form PV=nRT.
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| **Unit 2: Atomic Structure, Nuclear Chemistry & the Periodic Table** |
| **Essential Skills & Knowledge*** 2.a Students will be able to understand atomic structure.
* 2.b SWBAT understand the experimental basis for the discovery of atomic structure.
* 2.c SWBAT explain how the nucleus is held together.
* 2.d SWBAT explain radioactive isotopes.
* 2.e SWBAT understand the three most common forms of radioactive decay (alpha, beta, and gamma) and know how the nucleus changes in each type of decay.
* 2.f SWBAT explain how atomic number, atomic mass, and the periodic table are related.
* 2.g SWBAT use the periodic table to identify metals, semimetals, and nonmetals.
* 2.h SWBAT use the periodic table to identify alkali metals, alkaline earth metals, halogens, and transition metals.
* 2.i SWBAT use the periodic table to identify trends in ionization energy, electronegativity, and the relative sizes of ions and atoms.
* 2.j SWBAT use the periodic table to determine the number of electrons available for bonding.
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| **Unit 3: Chemical Bonding** |
| **Essential Skills & Knowledge*** 3.a Students will be able to explain how atoms combine to form ionic, covalent, and metallic compounds.
* 3.b SWBAT identify chemical bonds in molecules.
* 3.c SWBAT explain ionic bonds.
* 3.d SWBAT draw Lewis dot structures.
* 3.e SWBAT explain how electronegativity and ionization energy relate to bond formation.
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