Chemistry Disclosure (Syllabus)

I. COURSE: Chemistry (Instructor: Jay Marshall, M.D.)

II. COURSE OBJECTIVES:

The core standards and objectives for this course are provided by the Utah State Board of Education. This is a lengthy document and so is too long to include in this disclosure but can be found at https://schools.utah.gov/file/a1612aa6-e4aa-41d6-90d2-28678815c28c. I have also placed a copy of this document on my website www.dmarscience.com in the Chemistry and Honors Chemistry Sections. Objectives in addition to core objectives will be outlined in documentation accompanying each unit. In accomplishing these objectives it will be my intent to provide the student with multiple conceptual frameworks for the study of anatomy and physiology that will allow the them to (1) organize the content they will be learning in a logical, consistent, and retrievable manner, and which (2) will promote the development of critical thinking skills and the use of scientific inquiry as an approach to the natural world. Additionally students will learn math skills necessary to analyze and solve problems typical of a high school chemistry class.

III. TEXT: There is no official text for this course. Instructional materials will be provided either before or at the time of the corresponding discussion (see V. Course Management for further details).

IV. COURSE OUTLINE: The following course outline includes but is not limited to coverage of the Utah Core Science Standards (the number of the standard/objective covered follows the topic in parentheses).

(0) Orientation to the Class
- (0-1) The Structure of Chemistry
  - *Lab-Safety/Laboratory Equipment*
- (0-2) The Nature of Scientific Investigation (St 1/Obj 2: a,b)
  - *Lab-Signs of Chemical Change-The Lab Write-up*

(1) Unit 1: The Nature of Matter
- (1-1) Classifying Matter
- (1-2) Elements--Basic Atomic Structure and Nomenclature (St 1/Obj 2: c,d; Obj 3:b)
- (1-3) Compounds--Basic Compound Structure and Nomenclature (St 3/obj1: c, d; Obj 2: a-d)
- (1-4) Mass of Elements and Compounds and the Concept of the Mole (St 1/Obj 2:e)
- (1-5) Mixtures—Basic Concepts
- (1-6) Mixtures—Separation of Mixture Components
  - *Lab-Chromatography*
- (1-7) Mixtures—The Nature of Water and Solutions (Basic Solubility Rules)

(St 6/1: a-d)
Lab-Solubility

(1-8) Mixtures—Concentration and Molarity (St 6/Obj 1: c, e)
Lab-Making Solutions

(2) Unit 2: The Periodic Table

(2-1) Organization of the Periodic Table and Its Relationship to Physical and Chemical Properties of Elements (St 1/Obj 3: a, c-e; St 3/Obj 1:a, b)

(2-2) Organization of the Periodic Table and Its Relationship to Electron Configuration—Atomic Orbitals (St 2/Obj 1:a-d)

(2-3) Electron Configuration and Its Relationship to Ionization (St 2/Obj 1:a-d)
Lab-Flame Testing

(2-4) Historical Development of the Periodic Table and the Determination of Atomic Structure (Including Empirical Formulas) (St 1/Obj 2: a)
Lab-Determination of Empirical Formulas

(2-5) The Origin of the Elements (St 1/Obj 1:a-d)

(3) Unit 3: Basic Chemical Reactions

(3-1) Rules of Chemical Equations—Use of Molar Quantities and the Conservation of Mass (St 4/Obj 1:a-f; Obj 2: a, b)

(3-2) Synthesis, Decomposition, Replacement, Double Replacement and Combustion Reactions (St 4/Obj 1:a-f; Obj 2: a, b)
Lab-Precipitation Reactions in Qualitative Analysis

(3-3) Reaction Stoichiometry (St 4/Obj 1:a-f; Obj 2: a, b)

(3-4) Energy Transfer in Chemical Reactions—Conservation of Mass and Energy (St 4/Obj 2: c-f)

(3-5) Ionic Bonds—More Detail (St 3/Obj 1: c, d)

(4) Unit 4: Oxidation-Reduction Reactions

(4-1) Basic Processes
Lab-Titration

(4-2) Electrochemistry (St 4/Obj 2: e)
Lab-Voltaic Cells
Lab-Electrolysis

(4-3) Metals, Metal Compounds and Their Reactions

(5) Unit5: Covalent Bonding

(5-1) Covalent Bonds—More Detail (Including VSEPR) (St 3/Obj 1: c, d)

(5-2) Covalent Compounds

(5-3) Basic Reactions of Convalent Compounds, including Combustion Reactions

(5-4) Storage of Energy in Organic Compounds and Conversion to Useful Energy in Biologic Organisms

(6) Unit 6: Intermolecular Forces and Their Effect on Physical and Chemical Properties (St 3/Obj 3:a-c)

(7) Unit 7: A Survey of Other Element Families and Their Common Reactions

(7-1) Metalloids

(7-2) Halogens

(7-3) Other Non-metals

(7-4) Noble Gases

(7-5) Rare Earth Elements

(8) Unit 8: Rate Kinetics, Equilibrium and Solubility
- (8-1) Basic Rate Laws (St 5/Obj 1:a-d)
  - *Lab-Determination of the Rate Law of a Chemical Reaction*
- (8-2) The Concept of Equilibrium/Equilibrium Expressions (St 5/Obj 2: a)
- (8-3) Le Chatelier's Principle (St 5/Obj 2: b, c)
- (8-4) Solubility

(8) Unit 9: Acids and Bases
- (9-1) The Dissociation of Water and the pH Scale (St 6/Obj 3: a, b)
- (9-2) Formation of Excess H^+ (Acids) or Excess OH- (St 6/Obj 3: a, b)
- (9-3) Reactions of Strong Acids with Strong Bases (St 6/Obj 3: a, b)
- (9-4) Reactions of Strong Acids with Weak Bases (St 6/Obj 3: a, b)
- (9-5) Reactions of Weak Acids with Strong Bases, Weak Acids with Weak Bases, and Creation of Buffers (St 6/Obj 3: a, b)
- (9-6) Titration (St 6/Obj 3: c)
- (9-7) Commercial Uses of Acids and Bases and Environmental Impact of Acidic/ Basic Pollutants (St 6/Obj 3: d, e)
  - *Lab-Titration*

(8) Unit 9: States of Matter
- (9-1) Substances in the Solid, Liquid, Gaseous, and Plasma States
- (9-2) Conversion of Substances between the Physical States
- (9-3) Gas Laws
  - *Lab-Determination of the Molar Volume of a Gas*
- (9-4) Colligative Properties (St 6/Obj 2: a-c)

(10) Unit 10: Nuclear Chemistry
- (10-1) Nuclear Particles and Radioactive Decay (St 2/Obj 2:a-d)
- (10-2) Effects of Nuclear Radiation on Biologic Organisms (St 2/Obj 2:e)

V. COURSE MANAGEMENT:

This course occurs during period A4.

Required Materials—

-Please obtain a three ring binder, (preferably a two to three-inch binder) **to be used just for this class**—this binder should contain sections for class notes, homework, laboratory handouts, and vocabulary.

-Scientific calculator which can easily perform calculations with square roots, positive and negative exponents, logarithms, and parentheses. You can use your phone for this in class but it may not be used as a calculator on tests.

Participation/Lecture— **Class notes** for lectures will be regularly provided as handouts but will also be available on my web site (www.dmarscience.com). These will usually include blanks to be filled in during lecture time so it is my expectation that the student will have these notes available at all times during class. I will check these notes daily and award up to 10 participation points per class period based on completion of these and

other class time assessments. If a student misses a class period they will be excused from the responsibility of participation but will not be excused from the responsibility of the material covered. The student may obtain notes from a fellow student or from my website. "I was not here that day," will not be a valid excuse for not obtaining information covered on tests or homework.

Questions of the Day (QOD's) At the beginning of many lectures I will ask a **question of the day** based on the previous day's lecture—the students will be informed about upcoming QOD's and their content. These will be worth five or more points. **Many of the QOD's will not be planned in advance and so will not show up on the web site ahead of time—so, it will be important for the student to take note of an upcoming QOD and not forget to review the concept before class the next day.**

Labs—Lab activities will be dispersed throughout the course of the year and will be hands-on experiences related directly to the content being taught at the time. For most labs there will be a pre-lab handout and discussion to review concepts and expectations for performance and write-up of the lab. The lab handouts should be maintained in the binder. From this discussion, students will need to write a title, purpose, procedure and any data tables necessary for performance of the lab prior to the actual lab. If this is not completed by lab time, the student will not be able to participate in the lab and will lose all points for the lab (although the student may be able to recoup some of these points). Following the lab, the lab handout will also direct you in writing a results and conclusion section. Your lab notebook will be due the class period following the lab activity. Depending on the nature of the lab, points for completion will range from 20 to 50 points. You will be allowed to miss one lab for an excused absence during each quarter.

A laboratory safety contract will be issued the first day of class and this must be signed by both the student and parent by the first lab period or the student will not be allowed to participate.

Homework—the amount of homework will vary with the chapter and time available and will be mainly used for concepts that require practice or repeated exposure to learn. The text of all homework assignments will be provided. A firm due date will provided at the time of the assignment. These will be returned along with answer keys and will provide review material for tests.

Vocabulary—Students will be required to keep a vocabulary "journal." Vocabulary words corresponding to each section of notes, and their definitions, will be provided in the notes and students will be required to write provided definitions in the journal, which will simply consist of a separate section of sheets of lined paper in their binder. Each definition will be worth one half a point. Vocabulary may be completed any time prior to the corresponding test and will be checked at the time of each test.

Tests—Tests will generally occur at the end of every unit or more frequently if the unit is long. A detailed study guide will be provided for each test. There will be comprehensive semester and year-end final exams.

Quarter Grade

Quarter Grade—The quarter grade will be based on the following weights:

Tests—35%
Lab—20%
Participation—15%
Questions of the Day—10%
Homework—15%
Vocabulary—5%

The quarter grade will be determined based on the percentages outlined by school policy.

Class Rules

It is my hope and intent that classes will always be conducted in an atmosphere of mutual respect and that there will never be a need for disciplinary action. However, should the need occur, such action will follow the guidelines set forth in the School Policies. My classroom policies include:

(1) Maintain a learning environment that is free of distraction.
Students should refrain from distracting other students from learning, or from disrupting the flow of instruction through excessive talking, noise or physical activity.

(2) Language and topic of conversion must be appropriate.

Swearing, vulgarity, and discussion of objectionable actions or words of others, or descriptions of objectionable material from TV shows, movies, and other media is not acceptable, even if you are only repeating the words of others. Forms of swear words that are intended as replacements for the actual swear word are also discouraged—especially any replacement of the "f" word. Additionally, any form of sexual innuendo, intended or unintended, is not acceptable.

(3) Respect everyone.

Disrespect of staff or of other students in any form is not acceptable. This includes any and all forms sexual harassment and racial, ethnic, or lifestyle stereotyping or slurring.

(4) Electronic devices are to be used only for educational purposes.

The use of electronic devices is encouraged for educational purposes. However, if I see use of a cell phone, music player of any type, or any other electronic device which is being used for non-educational purposes, and which, in my opinion, is providing a distraction for you or others, I will take the device until the end of class. For repeated offenses, the device may be taken to the office to be picked up by your parent. In addition, only materials necessary for conducting class will be allowed on desktops

during class time.

(5) The only ingestible substance that may be brought into the room is water.

No food or beverages of any kind except for plain water will be allowed in the classroom unless for medicinal purposes (for example, cough drops). This includes mints, candy and gum.

Consequences

Depending on the nature of the infraction, I may issue a warning, a detention, or office referral. If I have to address continued infraction after a warning this will automatically result in a detention. If I have to address the issue a third time I will refer you to the office.

Leaving the Room During Class Time

If you need to leave the room during class time (restroom, drink, or locker for materials—**you will not be allowed to go to your car, so don't ask**), you do not need to interrupt the flow of the activity. Just get up, go to the provided clipboard, fill in your last name, where you are going, and time leaving. Take the room pass and go where you need to go, keeping the absence from the room to as short a time as possible—there should be no reason for you to be out of the room for more than five minutes. Upon return, sign in the time returned. Only one person may leave the room at a time. The number of times a student leaves the room will be monitored and access to this privilege will be limited it appears that a students use of it is becoming excessive.

Tardy Policy

If you enter the room after the bell rings please sign in on the sign-in form provided, including last name, date, and period. If you have a valid pass from the office or a teacher excusing you for being late, check the box indicating this and leave the pass in the container provided (a call or email from a teacher will also suffice). If you do not have such a pass I will mark you tardy and you will incur consequences according to school policy. If an unexcused tardy causes you to miss a question of the day you will not be allowed to take that QOD.

Absences/Late Work/Missed Test Policy

It is to your benefit to be present in class. Unexcused absences will incur consequences according to school policy. Work may be turned in late for full value only under the condition of an excused absence. Any work due on the day of the absence is due the class period you return or it will be considered late. Homework is due at the beginning of the assigned class period. You cannot complete it during that class time or get it to me at the end of the day—it will still be considered late. If the homework is completed but you left it at home it will still be considered late. However, late work can be turned in to me

at any date after the due date until the corresponding test for a maximum of 85% of the original point value. If you are absent the day of a test/quiz you will either complete the test/quiz outside of class time prior to the next class, or in class on the day of your return, whichever happens first. Depending on the circumstances of the absence (for example, an extended illness) these rules may be modified at my discretion. Because tests are announced in advance and I provide thorough study guides, you will not be excused from taking a test on the day it is given if you miss the class period immediately preceding the test.

VI. INSTRUCTOR AVAILABILITY

Students can meet with me during flex time or most nights after school. You may also contact me as necessary through the school email, jay.marshall@summitacademyschools.org. **If you are struggling please do not hesitate to get help. I am committed to your learning!**