Course Name: CH 104 Chemistry and the Environment				
Term: 2023-2024 Year	**Class Days: Follow Assigned Block Schedule**	**Class Time: Follow Assigned Block Schedule**	**Class Location: Room 211**	**Credit Hours: 4**
Teacher: MacKenzie (Mac) Morando		**Phone: (503) 667-3186 Ext. 1022**	**Email: mmorando@rsd7.net**	

Course Description

Introductory course designed to provide the background needed to understand the chemistry behind current environmental issues affection society. Topics such as air pollution, water pollution, ozone depletion, climate change and energy will be explored. Three hours of lecture and one two-hour laboratory section per week.

Course Standards

Primary University Learning Outcome: Quantitative Literacy

1. Demonstrate an understanding of the major principles and theories of general chemistry and its relationship to environmental issues.
   Aligns to: Chemistry Program Outcome 1
2. Demonstrate an understanding of the nature of science and scientific experiments.
   Aligns to: Chemistry Program Outcome 1
3. Use basic laboratory glassware and equipment to make scientific measurements, test hypotheses, collect scientific data.
   Aligns to: ULO: Inquiry & Analysis; Chemistry Program Outcome 3
4. Graph and interpret scientific data and perform calculations involving unit conversions.
   Aligns to: ULO: Quantitative Literacy; Chemistry Program Outcome 2
5. Analyze the validity of scientific data collected in laboratory assignments or provided in lecture to support an argument or position.
   Aligns to: ULO: Inquiry & Analysis; Chemistry Program Outcome 5
6. Understand ethical concerns regarding scientific research and the use of science to create a
   sustainable future.
   Aligns to: Chemistry Program Outcome 6

	Proficiency	Assessment	Measurement
1	Demonstrate the application of basic mathematical and algebraic skills in the demonstrated use of the Factor Label Method, the metrics system and the ability to do conversion factor calculations within the metric system and between English and metric. Understand graphic representation of environmental data (tests 1, 5, 6, 7)	All of these outcomes will be assessed using seven tests: 1. Measurements in Chemistry 2. Language and models of chemistry 3. IUPAC naming 4. chemical equations 5. Chemical quantitation. 6. Stoichiometry 7. Solutions **-- 70% on each subtest**	Test 1 -- Making measurements in Chemistry. Covers: significant figures, scientific notation, metric to metric and metric to English conversions, and density calculations. Graphic data interpretation Test 2 -- models of atoms: Covers: Protons, neutrons, electrons, isotopes and ions, using the periodic table as a tool and knowing its organization, periodicity, Mass # and atomic #, e- configs and orbital notation Test 3 -- Compound Naming: Covers: IUPAC naming if ionic and covalent compounds including transition metals; write formulas from IUPAC names, including transition metals; (note that periodic table with standard ions and polyatomic ions is known by the time of final assessment) Test 4 -- Chemical Equations: ID run types (5 types); Balance Chem Rxn; write rxn from description, include phx and balance (word -> rxn); write description from rxn; naming acids Test 5 -- Chemistry Quantitation, Empirical and Molecular Formulas: Covers: simple conversions from grams-moles- particles; volume of gases at STP (22.4L/1 mol), empirical formulas, molecular formulas; Avogadro's number. Test 6 -- Stoichiometry: Covers: grams-moles- moles-grams, limiting reagents; % compositions. Test 7: Solutions and naming: Naming elements and compounds
2	Demonstrate the ability to use significant figures, correctly rounding numbers in calculations, and the use of scientific notation. (tests 1, 5, 6, 7)		
3	Demonstrate a working knowledge of chemistry Language: a. Correctly spelled names and symbols of 60 of the most commonly used elements. b. A proficiency in using the IUPAC naming convention for binary ionic and covalent compounds. c. The ability to name all the common polyatomic ions and know the common charges on the transition and main block metals. d. The ability to name binary and ternary acids. (tests 2, 3, 4, 7)		
4	Demonstrate a working knowledge of important chemistry applications such as the ability to write true formulas of compounds, and to write and balance chemical equations when given a general description of the reaction. Application of chemistry to environmental problems such as air pollution and global climate change (tests 3, 4, 6)		
5	Demonstrate a working knowledge of foundational chemistry applications such as the ability to do chemistry quantitation and calculations on compound composition such as % composition, empirical and molecular formulas. The ability to convert back and forth between grams and moles and the ability to use Avogadro's number in calculations. Ability to apply quantitative skill sets to real world problems (Tests 5, 6, 7)		
6	Demonstrate a working knowledge of chemistry applications such as the ability to do stoichiometric calculations; mole to mole, gram to gram, limiting reagent calculations, solution and gas chemistry stoichiometry calculations. The ability to do solution calculations such as molarity, PPM and PPB. The ability to do solution stoichiometry such as determining the mass of a		

	precipitate or the amount of liberated gas from a solution reaction. Ability to relate stoichiometric calculations to environmental issues such as energy use and carbon dioxide production (tests 5 and 6)		without the ion-indicated periodic table. knowledge of making solutions; dilution calculations; types of solutions (gas- liquid, liquid-liquid, etc) ***70% or higher on each of the seven tests;*** tests are designed for 50-minute block
7	Demonstrate a working knowledge of the electronic structure of the elements: a. Ability to write the electronic configurations for the elements and predict the element's ion charge (s). (2, 3, 7) b. Ability to understand how electronic configuration dictates periodic trends. (2)		

Required Texts/Materials:

- Chemistry Lab specific notebook and folder (or a chemistry binder with paper works too) as long as all materials can be kept organized in one place
- Writing utensils
- School Chromebook and charger (access to schoology will be needed frequently)
- NO personal textbook needed

Grades

-College Grade-

1. Students must pass all exams with a 70% average or better. There are 7 exams. The first exam can be retaken if not passed. After that students are alloted 1 retake from exams 2-7. Students can not apply the exam 1 retake to exams 2-7. Only one retake will be allowed for 2-7.
2. To receive CH104 credit, the students must also complete the laboratory portion and group project portions of the course, measured by a pass/fail grade from the teacher regarding the student's ability to meet the laboratory proficiency criteria.
3. Final course grades are then weighted at 80% for the exam scores, and a combined 20% for both the lab proficiencies and group assignment. If a student receives a pass for the laboratory portion, they will be awarded the full 20% of the lab grade. An example of the grading scheme is provided below:

(Exam %) X (0.80) + 20% lab = Total % in Class

Example: (85%) X (0.80) + 20% = 88% for the class or an B+ grade.

Grade Scale:
100 - 92.5% - A
92.4 - 89.5% - A-
89.4 - 86.5% - B+
86.4 - 82.5% - B
82.4 - 79.5% - B-
79.4 - 75.5% - C+
75.4 - 72.5% - C
72.4 or lower - No grade

-High School Grade- ***This is separate from the college portion and will be your RHS grade***

Letter Grade Description & Percentage Breakdown:

We do not collect "points" in our classroom portion. Every piece of work or assessment is scored on a 0-4 scale in order to communicate the student's level of understanding. However, grades are then weighted based on the following categories:

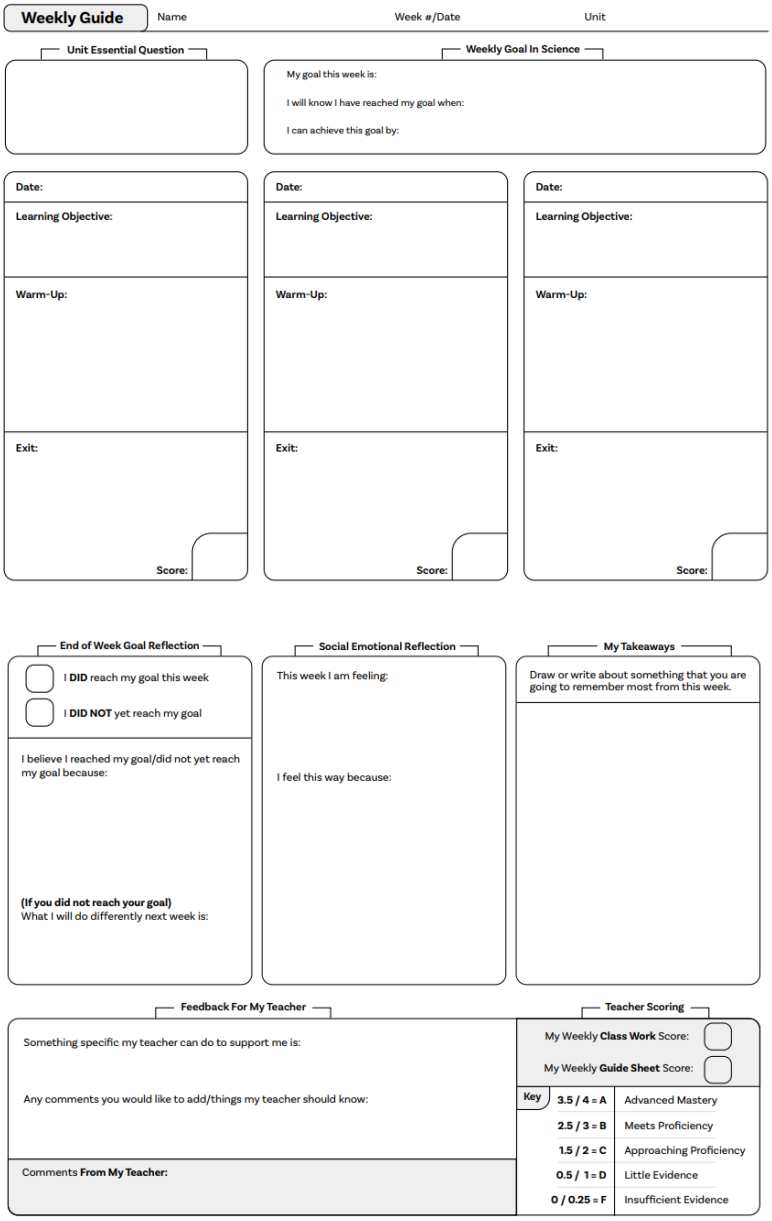
Formative Classwork

Formative classwork is all the work that we do each week in class. This includes activities, discussions, notes, formative quiz checks, mini labs, mini projects, etc. These **are worth 5% of your grade**. Each week students will receive a weekly guide (more on this below). On the weekly guide sheet there will be a box for an individual score for each day of the week based on what we did in class.These scores will be averaged and go into synergy as the formative classwork score for the week.

Unless a student needs to finish work they did not complete in class, there will be NO homework assigned to students. At home practice opportunities are optional. Homework has not been shown to improve student achievement throughout research. Additionally, I respect that they may need to work, spend time with family, play sports, or be involved in extracurriculars outside of school. That being said, I expect students to give 100% in class during the time I see them.

Weekly Guide Sheets

Each week students will have a weekly guide that they must fill out. At the beginning of the week we will set goals, write learning objectives, and at the end of the week we will reflect on different aspects. Students must complete the whole guide, thoroughly and thoughtfully. This is a separate score from the averaged classwork that week. An example shown below. These guides **are worth 5% of your grade** and will also be put in the gradebook at the end of each week.



Weekly Guide Name Week #/Date Unit

Unit Essential Question

Weekly Goal In Science

My goal this week is:

I will know I have reached my goal when:

I can achieve this goal by:

Date:	Date:	Date:
Learning Objective:	**Learning Objective:**	**Learning Objective:**
Warm-Up:	**Warm-Up:**	**Warm-Up:**
Exit: Score:	**Exit:** Score:	**Exit:** Score:

End of Week Goal Reflection

☐ I **DID** reach my goal this week

☐ I **DID NOT** yet reach my goal

I believe I reached my goal/did not yet reach my goal because:

(If you did not reach your goal)
What I will do differently next week is:

Social Emotional Reflection

This week I am feeling:

I feel this way because:

My Takeaways

Draw or write about something that you are going to remember most from this week.

Feedback For My Teacher

Something specific my teacher can do to support me is:

Any comments you would like to add/things my teacher should know:

Comments **From My Teacher:**

Teacher Scoring

My Weekly **Class Work** Score: ☐

My Weekly **Guide Sheet** Score: ☐

Key		
	3.5 / 4 = A	Advanced Mastery
	2.5 / 3 = B	Meets Proficiency
	1.5 / 2 = C	Approaching Proficiency
	0.5 / 1 = D	Little Evidence
	0 / 0.25 = F	Insufficient Evidence

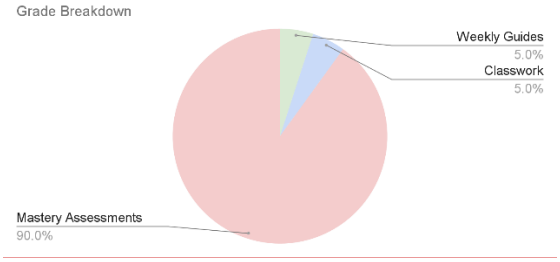
Mastery Assessments

Mastery assessments include things like end of unit exams, large projects, mastery based labs, and reports. Mastery assessments **are worth 90% of your grade.** Students will be made aware well in advance of what mastery assessments are coming up and what they are. Unless it is an exam, students will always be provided a detailed rubric that outlines their expectations on the assessment.

Mrs. Morando…Why are mastery assessments worth so much and classwork/weekly guides worth so little?!

Formative work is practice! I am not looking to penalize students based on how well they know something while they are learning it, or how many classwork assignments they don't turn in. I am looking to objectively communicate how well students understand the learning objectives of a unit after we have spent the unit learning and practicing and getting feedback. This method prioritizes positive progress and rewards students at their *best.*

Grading Summary:



Score Earned	Letter Grade	Description
3.5 or 4	**A (95% or 100%)**	The student has **demonstrated advanced mastery, beyond proficiency,** of course objectives.
2.5 or 3	**B (80 or 85%)**	The student has **demonstrated proficiency** of course objectives.
1.5 or 2	**C (70 or 75%)**	The student is **approaching proficiency** of course objectives.
0.5- 1	**D (60 or 65%)**	The student has **provided little evidence of proficiency** of course objectives.
0-0.25	**F (0% or 40%)**	The student has **not yet provided evidence of proficiency** of course objectives.

Final Grade

→ At RHS, Accelerated Chemistry is weighted and your final grade will be as follows:

80%= A
70%= B
60%= C
50%= D
>50%= F

Classroom Policies

Attendance: If you are more than 15 minutes late you will be marked absent for the day. Students must communicate pre-arranged absences with Mrs. Morando.

Late Work/Retake Policy:

Outside of extenuating circumstances, students **are permitted to submit weekly guides/classwork scores up to one week after it is due.** However, I highly encourage students to turn in work on time, in order to receive timely feedback from me and to avoid a build-up of work for themselves. Successful students stay organized and meet deadlines in order to stay on track.

Students may **always re-do formative work to show that they have made more progress** towards a learning objective **up to one week after it is due.** Students will retain the highest grade out of each attempt.

Late mastery assessments will be handled on a case by case basis. A meeting with Mrs. Morando is required. Additionally, opportunities to retake/redo/make greater progress on summative work will be handled on a case to case basis and require meeting with Mrs. Morando. You will not be able to make up Mastery Grades for the college portion of class.

Unless there has been an arrangement made with Mrs. Morando students are responsible for making up work they missed while absent no later than one week after returning from an absence. Students can look at schoology for what they missed, check in with peers, look at the student center in our classroom, and check in with Mrs. Morando.

I always encourage students to reach out to me first and advocate for themselves if they have any questions or concerns. That being said, please do not hesitate to reach out with any questions or concerns. If your student requires additional support, it is best to reach out as early as possible to set up a plan of action. This includes any absences that require make-up work.

Behavior:

Zero tolerance for bullying/hate speech. Automatic removal from class until a restorative meeting has happened to prioritize the safety of all students.

Zero tolerance for lab misconduct. Students not following lab rules will automatically be removed from the lab and receive a 0.

Cheating/plagiarism will receive a 0 and retakes will not be permitted.

Repeated behavior challenges will require a restorative meeting/letter before continuing to participate in class. Further behavior challenges will be referred to school administration.

Absolutely no headphones or cellphones in class unless directed by Mrs. Morando. Mrs. Morando will give one warning, after the second time the cell phone will be taken, and a third strike will result in the parent or guardian needing to come pick up the phone from school to get it back.

Willamette Promise Policies

Assessment Based-Learning

Western Oregon University's Willamette Promise Dual Credit courses are award through the Assessment-Based Learning model. This means that students will receive college credit based on their ability to show proficiency in the course standards. Students will demonstrate this proficiency through assessments designed by Western Oregon faculty that are scored by the participating high school teachers. Teachers are given and trained on rubrics codesigned by the college faculty. Students will not receive credit if their work does not meet standards.

Accepting or Declining Grades
After completing the required course assessments, students will be provide their final college grade. If a student receives a "C" or higher, will have the option to accept or decline having their grade transcribed on to their Western Oregon University transcript.

College-Level Content
Curriculum for this course is determined by the Western Oregon college. In college, students are often exposed to a range of ideas, some aligning with their own views and values and others not. We do not expect students to agree with what they read. However, we do expect students, taking a college course, to be emotionally mature enough to read, discuss, and consider viewpoints other than their own.

Western Oregon University Policies

Disability Accommodations: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Addie Howell, Willamette Promise Accelerated Learning Manager, 503-385-4783 or addie.howell@wesd.org.

Veterans' Accommodations: Western Oregon University recognizes that those who are actively serving in the Reserves or National Guard of the United States are required by their military contract to attend mandatory training. If you will be absent due to military orders, I strongly encourage you to communicate that with me as soon as possible so we may discuss alternative arrangements.

Academic Integrity: Students must adhere to WOU's Code of Student Responsibility. Academic dishonesty will not be tolerated in this course. I will report all instances of suspected dishonesty to the Student Judicial Committee for further action. Examples of inappropriate behavior includes doing assigned work for another student, sharing answers on work assigned to be done individually, sharing or copying answers during an exam or portraying another person's writing as your own

Tentative Schedule

Quarter 1

September- Mid October	Unit 1: Measurement in Chemistry & EXAM 1 ● Chemistry and Matter ● How Scientists Study Chemistry ● Scientific Notation

	● Units of Measurement ● Making Measurements in the Lab ● Plastics and Ocean Pollution
Mid October- Mid November	Unit 2: Atoms and the Periodic Table & EXAM 2 ● Atomic Theory ● Elements ● Mendeleev ● Organization of the Periodic Table ● Structure of the Atom ● Isotopes ● Electrons ● Periodic Table Trends ● Nuclear Energy

Quarter 2

Mid November- Winter Break (Mid December)	Unit 3: Ions and Ionic Compounds & EXAM 3 ● Octet Rule ● Ions - monatomic and polyatomic ● Ionic Bonding ● Writing Formulas ● Naming Compounds ● Properties of Ionic Compounds ● Acids and Bases ● Acid Rain
After Winter Break (Jan 3)- End of January (End of Semester 1)	Unit 4: Covalent Bonds and Molecular Compounds & EXAM 4 ● Sharing Electrons ● Single, Double, Triple bonds ● Electronegativity and Bond Polarity ● Properties of Molecular Compounds ● Naming Binary Molecular Compounds ● The Love Canal

Quarter 3

Beginning of Febuary- Beginning of March	Unit 5: Chemical Reactions & EXAM 5 ● Law of Conservation ● Writing and Balancing Chemical Equations ● Quantitative Relationships ● Synthesis, Decomposition ● Single, Double Replacement ● Oxidation and Reduction ● Air Pollution

Early March- Late April	Unit 6: Quantities in Chemical Reactions & EXAM 6 ● The Mole ● Atomic and Molecular Mass ● Mole-Mass Conversions ● Mole-Mole Relationships ● Limiting Reagent and Percent Yield ● Global Climate Change

Quarter 4

End of April- End of May	Unit 7: Solutions & EXAM 7 ● Types of Solutions ● Solubility ● Henry's Law ● Concentration ● Dilutions ● Ion Concentration ● Lead Pollution
End of May- Remainder of the Year	Environmental Final Project