**Course Description:** This course expands and discusses in greater depth the physical concepts and skills begun in Chemistry 1-2 plus additional material such as orbital hybridization theory, crystal structure, reaction kinetics, equilibrium, thermodynamics and electrochemistry. The students become familiar with college lab equipment, experimental procedures, and exacting lab reports. They should gain proficiency and confidence in numerical problem solving and essay explanation of the processes of physical, inorganic chemistry. This course meets the district requirement for chemistry. **AP Chemistry is designed to be equivalent to a first-year college introductory chemistry course and follows the College Board curriculum.**

**Instructional Philosophy:** While the goal of an AP course is to prepare a student for their future academic endeavors, I also believe it is my responsibility to provide them a knowledge base so they may effectively become scientifically literate members of society. Logical problem-solving and critical thinking will be emphasized to help students become independent thinkers, confident in the face of challenges. **Students will be challenged, but supported in their efforts.**

**Content Standards:**

**AP Chemistry Big Ideas**

1. **Scale, Proportion, and Quantity:** The chemical elements are fundamental building blocks of matter, and all matter can be understood in terms of arrangement of atoms.
2. **Structure and Properties:** Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them.
3. **Transformations:** Atoms retain their identity in chemical reactions. Changes in matter include the rearrangement and/or reorganization of atoms and/or the transfer of electrons. Rates of chemical reactions are determined by the details of the molecular collisions.
4. **Energy:** The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter. Any bond or intermolecular attraction that can be formed can be broken. These two processes are in a dynamic competition, sensitive to initial conditions and external perturbations.

**AP Science Practices**

1. **Models and Representations:** Describe models and representations, including across scales.
2. **Questions and Method:** Determine scientific questions and methods
3. **Representing Data and Phenomena:** Create representations or models of chemical phenomena.
4. **Model Analysis:** Analyze and interpret models and representations on a single scale or across multiple scales.
5. **Mathematical Routines:** Solve problems using mathematical relationships.
6. **Argumentation:** Develop an explanation or scientific argument.

**Texts:**

- *Multiple Choice & Constructed-response questions in preparation for the AP Chemistry Examination ©2014;* Hostage, Mueller, & Zipp, D&S Marketing – Used in class
5. Major Units of Study

The class will follow the text order, from Chapters 1-18.

**Semester 1**
- 1 Chemical foundations
- 2 Atomic Theory & Nomenclature
- 3 Stoichiometry
- 4 Solution chemistry & stoichiometry
- 5 Gases
- 6 Thermochemistry Pt 1
  - Enthalpy, specific heat
- 7 Atomic structure and periodicity
- 8/9 Bonding & hybridization
- 10 Properties of Solids

**Summer Project Review**

**Semester 2**
- 11 Intermolecular Forces/Mixtures of Solutions
- 12 Kinetics
- 13 Chemical Equilibrium
- 14 Acids and bases
- 15/16 Acid-base equilibrium
  - Solubility and complex ion equilibria
- 17 Thermochemistry Pt 2
  - Spontaneity, Entropy and Free Energy
- 18 Electrochemistry

6. AP Chemistry Course Expectations:

- **READ** in and out of class. You will be expected to keep up with class reading assignments.
- Complete In-Class Problems as well as assigned homework, including online homework.
- Be fluent with applicable equations and calculations for this course.
- Participate during in-class discussion and cooperative learning opportunities.
- Be consistent meeting deadlines. *This is especially important in AP Chemistry, as the class moves quickly.*

7. Mrs. Hamik’s Class Expectations

**Be Safe, Be Respectful, Be Responsible**

- Students will come to class prepared to learn with necessary materials (textbook, notebook, pencil, calculator).
- Students will use available class time to complete course work/task at hand as designated by the teacher.
- Students will **ask questions and seek out extra help when they feel challenged**; this includes scheduling time outside of class for tutoring. The student and Mrs. Hamik will agree upon a mutually acceptable time to meet based on availability.
- It is the student’s responsibility to make up work that has been missed due to absence. Communicate! If you know ahead of time that you are going to be absent, talk to Mrs. Hamik before you are gone to make arrangements to make up the work prior to your absence. If you are going to be absent on an announced test date, due to a school event or activity that is scheduled in advance, you must make arrangements with me PRIOR to your absence to take the test, or receive a zero. (Many students in AP Chem are heavily involved elsewhere at Burke – You’ll still be successful as long as you communicate!)
- **Safety Expectations:** Chemistry is a lab-based course with safety as an essential component. Students will follow the Omaha Public Schools guidelines on safety that is published in the science safety contract. Students will be provided a copy of the guidelines. Students and a parent are expected to read them before signing the contract. The student will not be allowed to participate in the lab activities until the signed contract is returned.
- Rules and guidelines in the Student Handbook will be followed in this class. Main points: **No food! No cheating! Be responsible with your phones. Students are expected to have the best academic integrity at all times.** (See handbook white page 16.)

**To reiterate:**
- **Cell Phones:** During class time, the default status is to have cell phones either powered off or put in silent mode. Cell Phone use in individual classrooms is at the discretion of each teacher based on the educational appropriateness of the device and classroom activity. Any violation of this policy will result in disciplinary action.
8. Assessment:
- Course grades will be determined by tests, lab reports, quizzes, and various assigned activities, both in class and online. Varying forms of assessment, both formal and informal, ensure the most complete evaluation of comprehension. Semester Finals will mirror the AP Exam format.
- AP College Board © Progress Checks will be utilized throughout the year as informal assessment ahead of unit tests.
- Chapter tests and labs are to be expected at the end of each unit outlined above.
  - Labs Reports: Due 1 week after last day of data collection.
  - Test Retakes: If approved via discussion with Mrs. Hamik., need to be completed within 1 week of passing back graded tests.
- State Testing: To address state requirements, all 11th grade students will complete a required ACT test.
- **AP Test: Thursday, May 7, 2020.** This exam is designed to measure how well you’ve mastered the content and skills of the course – a successful score could earn your credit and advanced placement in college. *Participation in this course implies that you are preparing to take the AP Exam in May; the class will progress at a pace designed to prepare you for all parts of the test. Registration is in the fall this year, and it is highly recommended to take the test. ALL OPS students enrolled in the AP course will take a cumulative, rigorous, end of year exam.*

9. OPS Secondary Grading Practices
All coursework and assessments are judged based on the level of student learning from “below basic” to “advanced.” This course will provide multiple opportunities to achieve at the “proficient” to “advanced” levels. Students are evaluated based on a proficiency scale or project rubric. Proficiency scales for this course are available upon request.

Weighting Assignments (Using A Multiplier)
When entering grades in the grade book, teachers may assign greater weight to some assignments than others. For example, the final exam may impact a student’s summative grade more than a unit test. Teachers will have the option to use the multiplier to weigh both formative and summative assessments to a maximum of 4. If a weight of 2 or more is applied to an assessment, this information will be communicated to students at the time the assessment is announced.

There are three types of coursework
- **Practice** – assignments are brief and done at the beginning of learning to gain initial content (e.g., student responses on white boards, a valid sampling of math problems, keyboarding exercises, and diagramming sentences, checking and recording resting heart rate). Practice assignments are not generally graded for accuracy (descriptive feedback will be provided in class) and are not a part of the grade. Teachers may keep track of practice work to check for completion and students could also track their practice work. Practice work is at the student’s instructional level and may only include Basic (2) level questions.

- **Formative (35% of the final grade)** – assessments/assignments occur during learning to inform and improve instruction. They are minor assignments (e.g., a three paragraph essay, written responses to guiding questions over an assigned reading, completion of a comparison contrast matrix). Formative assignments are graded for accuracy and descriptive feedback is provided. Formative work may be at the student’s instructional level or at the level of the content standard. Formative assessments/assignments will have all levels of learning – Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment, students will be able to earn an Advanced (4). Teachers will require students to redo work that is not of high quality to ensure rigor and high expectations. The students’ score on a formative assessment that was redone will be their final score. It is recommended to have three to five formative assessments for every one summative assessment.

- **Summative (65% of the final grade)** – assessments/assignments are major end of learning unit tests or projects used to determine mastery of content or skill (e.g., a research paper, an oral report with a power point, major unit test, and science
fair project). Summative assignments are graded for accuracy. Summative assignments assess the student’s progress on grade level standards and may not be written at the student’s instructional level. Summative assessments/assignments will have all levels of learning — Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment students will be able to earn an advanced (4).

To maintain alignment of coursework to content standards, which is a key best practice for standards-based grading, teachers will utilize a standardized naming convention for each of the standards within a course. The content standard will be marked on each assignment entered into Infinite Campus (District Grading Program) using all capital letters followed by a colon. After the colon will be the title of the coursework.

At the end of the grading period, scores are converted to a letter grade using this grading scale.

\[
\text{A} = 3.26 - 4.00 \quad \text{B} = 2.51 - 3.25 \quad \text{C} = 1.76 - 2.50 \quad \text{D} = 1.01 - 1.75 \quad \text{F} = 0.00 - 1.00\
\]

10. Redoing/Revising Student Coursework

1. Students are responsible for completing all coursework and assessments as assigned.
2. Students may be allowed redos and revisions of coursework for full credit during that unit of study based upon the teacher’s professional judgment and evidence collected throughout the unit. Scores for student work after retaking, revising or redoing will not be averaged with the first attempt at coursework or assessment but will replace the original student score.
3. Students are expected to complete assessments when given to the class, or if a student was justifiably absent, at a time designated by the teacher.
4. Redoing, retaking or revising will be done at teacher discretion in consultation with the student and parent(s). Teachers may schedule students before, during, or after school to address needed areas of improvement if not convenient during class. The time and location for redoing, retaking or revising will be done at the teacher’s discretion in consultation with the student and parent(s).

Late Coursework

Students are expected to complete coursework on time. Late coursework may be accepted for full credit until the end of the unit based on the teacher’s professional judgment and evidence collected throughout the unit. Accepted late work will not result in a reduction in grade and the M (Missing) will be replaced with the score earned by the student. The teacher or school may make exceptions depending upon student circumstances (such as prolonged absences due to illness).

**CLARIFICATIONS:**

*Late and revised assignments MUST BE SUBMITTED IN A TIMELY FASHION. Assignments received after on-time work has been returned to others, will generally not be accepted. Rare exceptions may be considered on a case by case basis.
**Assignments that are not turned in on the original due date as a result of absences will be handled according to The Burke Handbook Policy.*

Missing Coursework

Work not turned in at all will be recorded in Infinite Campus (district grade book) as an M for missing, which calculates to a score of zero. After a summative assessment, missing assignments will not be accepted for that unit; the unit is closed and the “M” remains in the gradebook.

Independent Practice

The role of independent practice is to develop knowledge and skills effectively and efficiently during the unit of study. Independent practice helps guide the learning process by providing accurate, timely and helpful feedback to students without penalty. This is more heavily utilized in AP Chemistry—students will quickly find skipping the independent practice is not in the best interest of their understanding and subsequent class grade.
After reviewing the details and expectations of AP Chemistry in this syllabus, please indicate your understanding with a signature on the syllabus receipt document (handed out in class to the student).

Both student and Parent/Guardian are required to sign.

I’m looking forward to a great year! – Mrs. Hamik