SCIENCE

CHEMISTRY

IN THIS COURSE, WE WILL STUDY molecules and their interactions**.** Chemistry is an inquiry-based course that examines matter and the changes it undergoes. Experimentation and activities are used to introduce concepts including the structure of atoms and chemical compounds, the relationships among the elements on the periodic table, chemical and physical transformations, and the measurement and calculations of chemical quantities. At the completion of the course, students will develop an understanding of interconnections among the science, technology, society and the environment. Additionally, chemistry is a course that is focused on developing students' critical thinking skills by actively engaging them in scientific practices. Students will ask and define questions, design and conduct their own experiments, evaluate and analyze scientific data, and create and use models to construct a deep understanding of the world around them. Students will be expected to learn course material and complete coursework outside of synchronous class time in order to maximize our synchronous time together.

TOPICS WE WILL COVER INCLUDE: atomic structure and theory, development and organization of the periodic table, chemical bonding and nomenclature, chemical reactions, chemical equations and quantities, stoichiometry, thermochemistry, states of matter, solutions, acids and bases, kinetics and equilibrium

WORKLOAD AND EXPECTATIONS

Students will be asked to spend time outside of class reviewing for tests and quizzes. This may include viewing video lectures or class slideshows in addition to completing practice problems. Projects and lab activities that involve research and analysis will be assigned to students and may require time both inside and out of class. Assessments will require learners to think critically about what they are learning, making claims that are based on data driven evidence and sound scientific reasoning.

Students taking Research Chemistry will, in addition to coursework assigned in class, be responsible for conducting self-guided research into a topic approved by their research advisor. The work for this project will be completed almost exclusively outside of the regularly scheduled class time.

TIPS FOR SUCCESS

- ❏ Establish daily learning routines
- ❏ Check your Schoology courses & school email daily
- ❏ Be a good digital citizen
- ❏ Communicate with your family, teacher and/or school counselor if you need additional resources or support

COURSE DESCRIPTION FROM THE LCPS PROGRAM OF STUDIES

Chemistry
Grade(s): 10-12
Credit: 1
Prerequisite: Algebra I
Chemistry students develop an appreciation for the interaction between matter and energy. Students investigate the structure, properties and reactions of matter. Classroom study is balanced with laboratory experiences to deepen the students' understanding of Chemistry. Analytical experimental investigations are conducted using the scientific method, and proper safety precautions are employed. Students investigate kinetic theory, the Periodic Table, stoichiometry, reactions and equations, and chemical equilibrium. Students report findings of both qualitative and quantitative data using effective communication skills, correct expression of significant figures and error, and dimensional analysis in problem solving. Chemistry is designed as a challenging course requiring advanced reading and writing skills.

ASSESSMENTS

Quizzes and exams in Chemistry will be timed and involve multiple-choice as well as performance based assessments utilizing various rubrics. A sample Chemistry exam might look as follows:

- 20 SOL-Style Multiple Choice Questions in 30 minutes
- Student-created product or performance based assessment demonstrating the student's understanding of the content allowing for student voice and choice

The assessments will ask students to think critically about content learned, not just rote memorization and recall of topics discussed in class. Time spent studying and understanding the material will be necessary.

In addition to quizzes and exams, students will also be assessed on laboratory experiments and activities that require students to safely carry out an experiment and discuss their findings using the CER format (claim-evidence-reasoning).

OTHER INFORMATION

If you have questions about Chemistry and what to expect, please do not hesitate to reach out to the following teachers when making your course selections:

august.schoenfelder@lcps.org
benjamin.reade@lcps.org
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This class is challenging, but you can do it! (Plus, you will be a better scientist and chemist afterwards!)