Mt. Diablo Unified School District
Course of Study

COURSE TITLE: Dynamic Chemistry of the Earth System

COURSE NUMBER:-702940

DEPARTMENT: Science

LENGTH OF COURSE: One Year

CREDITS PER SEMESTER: 5

GRADE LEVEL(S): 9-12

REQUIRED OR ELECTIVE: Required

PREREQUISITES: None

BOARD OF EDUCATION ADOPTION: April 2024

COURSE DESCRIPTION:

Dynamic Chemistry of the Earth System is a survey course for students with significant cognitive disabilities who are anticipated to earn an Alternative High School Diploma in accordance with California Education Code 51225.31.

The course applies the foundations of chemistry to help students understand the chemical processes that drive the Earth systems. Students will apply chemistry principles to solve real world problems. Upon completion of the course students will have explored the fundamentals of chemistry and essential roles that these processes play on Earth.

TIME ESTIMATES
Major units will vary in length,

COURSE OBJECTIVES

Content Themes:

- Combustion, Heat and Energy
- Atoms, Elements and Molecules
- Understanding Chemical Reactions
- Climate Change

Skills:

- Interpreting Graphics

- Analyzing Sources
- Determining Cause and Effect
- Conducting effective research
- Speaking and listening and interpreting (academic discussion, presentation, etc)
- Collaborating constructively on team and group projects.

COURSE CONTENT

Unit 1 Title
Combustion, Heat, and Energy
Unit 1 Description
Students investigate the amount of stored chemical potential energy in food. Students use models to understand how energy flow within Earth drives surface processes and impacts Earth's systems. Sample activities may include: ● Conducting experiments that depict flows of energy in a closed circuit ● Research potential energy in different food items ● Construct models that depict tectonic plate shifts or other geomorphological phenomenon

Unit 2 Title
Atoms, Elements, and Molecules
Unit 2 Description
Students will learn about atoms and that atoms are made up of smaller particles Sample activities may include: ● Creating models of other representations of atoms Research the universe and its formation

Unit 3 Title
Understanding Chemical Reactions
Unit 3 Description
Students explore states of matter and phase changes. Students analyze different types of chemical reactions. Sample activities may include:

- Engage in experiments that demonstrate a variety of chemical reactions
- Observe different materials in different states of matter and understand the factors involved
- Identify chemical changes in the community such as rust or weathering of materials

Unit 4 Title
Climate Change
Unit 4 Description
Students study factors that impact weather and climate over time. Students evaluate different solutions that can reduce the impacts of climate change. Sample activities may include: ● Experiments that observe plants health under a variety of conditions, including manipulating variables ● Creating a presentation to demonstrate factors leading to climate change ● Observing weather patterns over time

EVALUATION OF STUDENT PROGRESS

Assessment Methods:

A variety of assessments will be used to measure students' progress including by not limited to formal lab reports, projects, presentations, quizzes, and summative tests and class discussions.