

Pathway Courses

Introductory Core Courses

Biological Links to Energy & Environment

This hands-on course integrates biology and the basics of energy science. This integration is important because biological processes are dependent on energy flow and environment factors. The natural environment is able to direct energy in a one-way flow so that various forms of energy are used throughout the dynamics of an ecosystem. By making connections of energy flow in a single cell or ecosystem to energy use by society, students gain a better understanding of the need to use energy more sustainability. Specific attention is paid to energy acquisition and use in living organisms, complex ecosystems and the changing environment. This includes a fundamental look at cell type, function and structure. Students compare energy sources for plants and animal cells with renewable and non-renewable energy use by humans. Specific aspects to CTE include an understanding of energy types, energy calculations, and how energy is derived from a variety of natural and man-made sources.

Chemistry & Environmental Engineering: Water

This course serves to introduce the principles of chemistry and environmental engineering through an understanding of the behavior of water and its interactions with the environment. Students will use a systems-based approach to understand that all environmental systems consist of matter and will apply this knowledge to solving current and future global water issues. This course seeks to explain the basic chemistry required to understand crucial environmental interactions in order to encourage students to take a critical approach to solving complex water-related issues on a local and global scale. Upon completion of the course, students will be able to integrate the complex questions surrounding the future use and consumption of water and develop possible solutions to this global crisis.

Pathway Courses

Elective Courses

Environmental Sustainability (PLTW)

Environmental Sustainability (ES) is a specialization course in PLTW Engineering. In ES, students investigate and design solutions to solve real-world challenges related to clean drinking water, a stable food supply, and renewable energy. Students are introduced to environmental issues and use the engineering design process to research and design potential solutions. Utilizing the activity-project-problem-based (APB) pedagogy, students transition from completing structured activities to solving open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Through both individual and collaborative work, students practice common design and scientific protocols. Students develop skills in designing experiments, conducting research, executing technical skills, documenting design solutions according to accepted technical standards, and creating presentations to communicate solutions.

Energy Technology with Industry Applications I

This class provides students with the history and development of power production and transmission in the United States: basic electrical circuit's theory; practical applications of basic circuits; and advanced energy industry applications specific to California's energy consumption and conservation. This is a lab-based curriculum designed for students to study basic electrical theory safely and apply these concepts to various forms of energy production and the building of energy production models. Students will become familiar with the use of industry-standard tools including soldering and electrical tools. Technical writing will be infused throughout each unit of study.

Pathway Opportunities

Certification Options:

- OSHA 10-Hour General Industry
- Renewable Energy Specialist (CRES)
- Sustainability Specialist (CCS)

Technology Skills:

- Logger Pro
- STEM Hero
- Microsoft Office

Professional Skills:

- Team Collaboration
- Project Management
- Problem-Solving Skills
- Communication Skills
- Presentation Skills
- Technical Writing

Career Opportunities

- Ecosystem Protection & Environmental Management
- Energy Analyst
- Environmental Engineer
- Environmental Science & Protection Technician
- HVAC Technician
- Industry Facilities Technician
- Journeyman
- Lineman
- Load Forecaster
- Pollution Abatement
- Power Plant Technician
- Public Works Director
- Renewable Program Coordinator
- Solar Technician
- Sustainability Engineer
- Utilities Operator
- Water Resources Technician
- Wind Technician

HOW TO APPLY:

Request application information from your high school counselor.

For more information about the Environmental Engineering Pathway, please contact:

CTE Counselor

Tracy Brandon
559-327-3000

CTE Instructors

Sascha Ludwig
Kendia Herrington
Richard Kinney

CTE Learning Director

Jennifer Carter
559-327-3000

Environmental Resources Pathway

Buchanan High School



Clovis Unified School District