

Science, Technology, Engineering and Math (STEM)

CTE and the STEM Connection

The purpose of this document is to provide a brief overview of how Career and Technical Education supports STEM initiatives.

STEM is...

- Science, Technology, Engineering and Math.
- A career pathway to high wage, high skill, high demand jobs.
- Connected and interrelated through multiple careers and subject areas.
- Development of strong problem-solving, critical-thinking and project management skills.
- Critical in today's global market.

How does CTE support STEM education?

- CTE provides clear **pathways** to STEM careers helping Oregon meet the 40-40-20 goal.
- CTE provides opportunities to learn **critical-thinking and problem-solving skills** within STEM content.
- CTE provides **applied learning** and high wage, high demand, high skill career preparation in STEM content.
- CTE increases student **persistence** in STEM education through project, problem, and personal engagement.

What are examples of CTE and STEM in Oregon?

Pathways

Evergreen STEM Institute

The Evergreen STEM Institute is a partnership between Chemeketa Community College, Evergreen Aviation and Space Museum, and McMinnville School District. The institute provides advanced STEM course work in Aerospace Engineering and Digital Electronics through a combination of online instruction and hands-on labs at the museum. Through this hybrid approach to teaching, Evergreen STEM Institute has been able to offer students a clear understanding of the necessary coursework, certification and degrees to obtain a career in these areas.

Energy Management

Lane Community College is a national leader in energy management training. The Energy Management Program began in 1980 and obtained a grant from the National Science Foundation to develop a curriculum that combined the principles of basic physics with energy analysis techniques. Students gain a working understanding of energy systems in today's built environment and the tools to analyze and quantify energy efficiency efforts. The program began with an emphasis in residential energy efficiency / solar energy systems and has evolved to include commercial energy efficiency and renewable energy system installation technology.

Critical Thinking and Problem Solving

Health and Science School

The Health and Science School in the Beaverton School District provides all middle school and high school students with a CTE program based in health and sciences. The core curriculum includes Project Lead the Way courses in engineering and biotechnology.

Crescent Valley High School – Pre-Engineering

Crescent Valley High School in collaboration with Linn Benton Community College, Oregon State University and local industry partners provide students with a series of courses that expose students to the real-world problems in the field of engineering. The classroom is set up modeling an engineering work environment where students work in teams on solving complex problems. Often the solutions are formally presented to actual engineers.

Applied Learning

IT Careers in Rural Oregon

Three rural school districts (Arlington, Grant Union and Joseph) have partnered with the Willowa ESD and Treasure Valley Community College to provide college level instruction and credit to high school students in Information and Communication Technology with a focus on Network Design and Administration. The program includes not only classroom based instruction but authentic career experiences for students along with the opportunity to obtain A+/CompTia industry certification.

Math-in-CTE Instructional Strategy

Over the last six years CTE and math teachers have participated in the Math-in-CTE professional development. CTE teachers partner with a math teacher to develop practical CTE lessons with enriched math content. A national study of this model showed students increased their scores on math assessments when taught using the math-enhanced lessons.

Persistence

Rogue Community College STEM Academy

High school students from throughout the Rogue Valley engage in the STEM Academy at Rogue Community College which provides opportunities to explore and chart a path into STEM-related CTE careers. Students are able to envision themselves participating in, and completing, STEM-related career programs through interactive workshops on campus as well industry tours, presentations, and volunteer opportunities.