Discipline: Engineering Technology / Applied Technology

Date Submitted: February 2016

STATEWIDE CAREER PATHWAYS

Cerritos College
ARTICULATION TEMPLATE

Cerritos College Course:
ET 101: Principles of Engineering Technology (3 Units)
Cerritos College
11110 Alondra Blvd.
Norwalk, CA 90650

El Rancho High School Course:
Principles of Engineering (Project Lead the Way) (10 Units)
El Rancho High School
6501 Passons Blvd.
Pico Rivera, CA 90660

General Course Description:
This course introduces the student to the design process in engineering technology by the use of activities-based learning, project-based learning, and problem-based learning. The student will learn about the design process, geometric relationships, visualization, technical sketching, modeling, model documentation, and assemblies.

College Prerequisite(s): None	**HS/ROCP Prerequisite(s):** None

Advisories/Recommendations:

Course Content:

- Engineering Career Awareness
- Social responsibility and ethics
- Safety practices and standards in the engineering environment
- Communication, presentation skills and teamwork
- Visualization and sketching techniques
- Engineering drawings and standards
- Mechanical systems and mechanisms
- Basic thermodynamics
- Fluid control and hydraulic systems
- Control systems and feedback
- Robotics
- Data collection and analysis
- Engineering units, instruments, tools and measurements.
- Statics
- Material properties and strengths of materials
- Demonstrate the ability to work as a team member and collaborate in a diverse environment.

Competencies and Skill Requirements (Use additional pages as necessary.) Where appropriate, please incorporate standards being used (e.g. CTE standards).

At the conclusion of this course, the student should be able to:

- Define various careers available and terminology used in the fields of engineering and engineering technology
- Demonstrate an understanding of social, economical, environmental and ethical impacts of engineering
- Demonstrate safety practices and standards in the engineering environment
- Demonstrate ability to effectively communicate in writing and verbally with high-quality visual aids.
- Collaborate in a diverse environment
- Apply visualization and sketching techniques to solve engineering problems
- Create basic engineering drawings utilizing industry standards
- Create and analyze basic engineering systems (such as mechanisms, thermodynamics, fluids, electrical, control, mechanical, robotics)
- Design, assemble, program and test an autonomous robot capable of performing a teacher-assigned task.
- Acquire, analyze and interpret data
- Demonstrate proper use of various engineering instruments and tools (such as scales, calipers, micrometers, multimeters, thermometers.)
- Design and analyze basic static mechanical systems such as beams and columns
- Measure and interpret material properties using stress-strain curves.
- Demonstrate the ability to work as a team member and collaborate in a diverse environment.

Measurement Methods (include any industry certification or licensure):

- Attendance and Group Collaboration
- Homework
- Quizzes
- Demonstration of RobotC programming
- Projects/Design Challenges
- Written & Oral Presentations
- Career Research and Engineer Interview Paper
- Midterm
- Final

Textbooks or Other Support Materials (including Software):

The entire curriculum for this course is supplied in electronic format by Project Lead the Way[tm] and no other text books are required. There is no textbook, but students may download hard copies of the electronic files.

- mypltw.org account
- Autodesk Inventor Professional (2015)
- MD Solids
- RobotC
- VEX Robotics Kits
- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint

- Circuit Board Hardware (resistors, DC Power Supply, Multimeter, LEDs and Bread Board

Procedures for Course Articulation:
Cerritos College credit for the articulated course listed above may be received when the following criteria are met:

1. The student has completed the articulated course listed above with a "B" grade or higher in *Principles of Engineering*.
2. The student must enroll at Cerritos College within two (2) years from the semester date in which the course was completed.
3. The student will present verification of successful completion of the articulated course by presenting a *Cerritos College Petition for Credit by Examination* to a Cerritos College Engineering Technology Instructor. The *Cerritos College Petition for Credit by Examination* should be completed and signed by the Instructor, Dean, and Admissions & Records.
4. No more than 12 units of credit may be accepted for credit by examination.

This Agreement will be reviewed annually and will remain in effect until cancelled by either party giving 30 days written notice.

High School/ROP District Signatures		**Cerritos College Signatures**	
		2/17/16	
Faculty/Department Chair	Date	Instructor/Division Chair	Date
	2/26/16	Read 2/17/16	
Principal	Date	Dean of Instruction	Date
	3/16/16		2/18/16
Superintendent	Date	Vice President	Date