



ARTICULATION TEMPLATE

<p>General Course Title: ET 101: Principles of Engineering Technology (3 Units) Cerritos College 11110 Alondra Blvd. Norwalk, CA 90650</p>	
<p>Lynwood High School Course: Principles of Engineering (Project Lead the Way) (10 Units) Lynwood High School 4050 E Imperial Hwy. Lynwood, CA 90262</p>	
<p>General Course Description: This course introduces the student to principles of engineering technology by the use of activity-based learning, project based learning, and problem-based learning. The student will learn about the design process, communication and documentation, engineering systems, statics and strength of materials, properties of materials and materials testing, reliability, and kinematics. This course is not open to students who have received credit in EL 102.</p>	
<p>College Prerequisite(s): None</p>	<p>HS/ROCP Prerequisite(s): Student has successfully completed "Introduction to Engineering Design", the initial course in the PLTW Engineering Pathway.</p> <p>Student is expected to be taking a college prep curriculum and be enrolled in Algebra 1, Algebra 2 or Geometry.</p>
<p>Advisories/Recommendations: This is one of the first two Project Lead the Way engineering courses taught at the high school level. It is usually taught at the 9th or 10th grade level. Although there are no specific prerequisites or co-requisites, most students are expected to be taking a college prep curriculum and be enrolled in high school algebra.</p>	
<p>Course Content:</p> <ul style="list-style-type: none"> • 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):

- Projects
- Written/Oral Technical Presentations
- Portfolio
- Skill Demonstration
- Objective Exam
- Problem-Solving Exam
- Essay Exam
- Class Discussion
- Reports

Sample Textbooks or Other Support Materials (including Software):

The entire curriculum for this course is supplied in electronic format by Project Lead the Way™ and no other text books are required. The texts below may be used as useful classroom references.

Textbooks:

- Engineering Drawing and Design, 5th Edition
Madsen, David A.
ISBN-13: 978-1435428362
ISBN-10: 1435428366

Software:

- VEX Robotics platform
- Logger Pro-Data collection and analysis software
- ROBOTC- Robot programming language
- VEX RobotC
- Structural Stress Analyzer 1000
- MD Solids
- Virtual Tensile Tester
- Vernier Logger Pro
- Flash Player
- National Instruments LabView
- Microsoft Word (or equivalent)
- Microsoft PowerPoint (or equivalent)
- Microsoft Excel (or equivalent)

Procedures for Course Articulation:

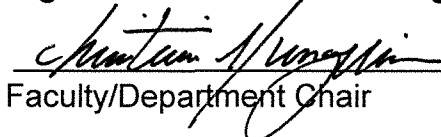
Cerritos College credit for the articulated course listed above may be received when the following criteria are met:

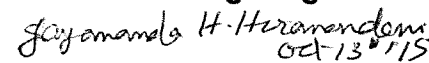
1. The student has completed the articulated course listed above with a “B” grade or higher in *Principles of Engineering*.
2. The student must enroll at Cerritos College within two (2) years from the semester date in which the course was completed.
3. The student will present verification of successful 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

 10/15/15
Faculty/Department Chair Date

 Oct 13th 15
Instructor/Division Chair Date

Principal <i>CEJ 300</i>		Date <i>10/15/15</i>	
Superintendent <i>[Signature]</i>		Date <i>10/16/15</i>	
Dean of Instruction <i>[Signature]</i>		Date <i>10/13/15</i>	
Vice President <i>[Signature]</i>		Date <i>10/14/15</i>	
[Office use only.] TOPs Code:		[Office use only.] Internal Tracking Number:	
Date Accepted by Steering Committee:			