

Date Submitted: June 2015



## ARTICULATION TEMPLATE

<p><b>General Course Title:</b>                  ET 101: Principles of Engineering Technology (3 Units)                  Cerritos College                  11110 Alondra Blvd.                  Norwalk, CA 90650</p>	
<p><b>Warren High School Course:</b>                  Principles of Engineering (Project Lead the Way) (10 Units)                  Warren High School                  8141 De Palma St                  Downey, CA 90241</p>	
<p><b>General Course Description:</b>                  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><b>College Prerequisite(s):</b> None</p>	<p><b>HS/ROCP Prerequisite(s):</b> None</p>
<p><b>Advisories/Recommendations:</b> 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 9<sup>th</sup> or 10<sup>th</sup> 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><b>Course Content:</b></p> <ul style="list-style-type: none"> <li>• Engineering Career Awareness</li> <li>• Social responsibility and ethics</li> <li>• Safety practices and standards in the engineering environment</li> <li>• Communication, presentation skills and teamwork</li> <li>• Visualization and sketching techniques</li> <li>• Engineering drawings and standards</li> <li>• Mechanical systems and mechanisms</li> <li>• Basic thermodynamics</li> <li>• Fluid control and hydraulic systems</li> <li>• Control systems and feedback</li> <li>• Robotics</li> <li>• Data collection and analysis</li> <li>• Engineering units, instruments, tools and measurements.</li> <li>• Statics</li> <li>• Material properties and strengths of materials</li> <li>• Demonstrate the ability to work as a team member and collaborate in a diverse environment.</li> </ul>	

**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):**

- Written tests
- Essay Exam
- Objective Exam
- Project(s)
- Portfolio
- Classroom Discussion
- Reports
- Problem Solving Exam
- Skill demonstration
- Written and oral Technical Presentations

**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 Your Future: A Project Based Introduction to Engineering  
Gomez, Alan & Oakes, William  
SBN: 1881018881  
Great Lakes Press, INC
- Introduction to Engineering, 3rd Edition (One Class Set Needed)  
by Paul H. Wright  
ISBN: 0-471-05920X

John Wiley & Sons

- Engineering Drawing and Design, 3rd Edition (One Class Set Needed)  
by Madsen Shoemaker  
ISBN: 0766816346  
Delmar Publishing  
Thompson Learning

**Software:**

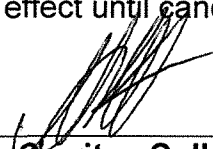
- Autodesk Inventor
- Microsoft Word (or equivalent)
- Microsoft Excel (or equivalent)
- National Instruments LabView

**Procedures for Course Articulation:**

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

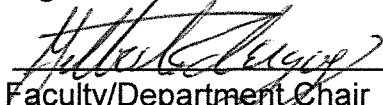

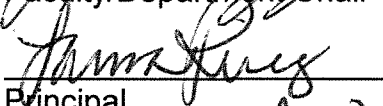
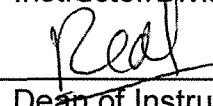
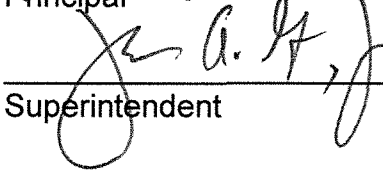
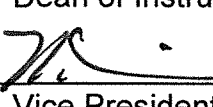

1. The student has completed the articulated course listed above with a "B" grade or higher in *Principles of Engineering*.
2. The student must enroll at Cerritos College within two (2) years from the semester date in which the course was completed.
3. The student will present verification of successful completion of the articulated course by presenting a *Cerritos College Articulation Card* to a Cerritos College Counselor. The *Cerritos College Articulation Card* should be completed and signed by the student's high school counselor or teacher.
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.

 07/1/15

**High School/ROP District Signatures**

**Cerritos College Signatures**

	Date		Date
Faculty/Department Chair		Instructor/Division Chair	
	9/4/15		7/21/15
Principal	Date	Dean of Instruction	Date
			7/27/15
Superintendent	Date	Vice President	Date
			7/27/15

[Office use only.]  
TOPs Code:

[Office use only.]  
Internal Tracking Number:

**Date Accepted by Steering Committee:**