



CERRITOS COLLEGE ARTICULATION AGREEMENT

<p>Cerritos College Course: ENGT 104: Principles of Aerospace Design Technology (4 units)</p> <p>Cerritos College 11110 Alondra Blvd. Norwalk, CA 90650</p>	<p>High School Course: Aerospace Engineering (Project Lead the Way)</p> <p>Corona High School 1150 W 10th St. Corona, CA 92882</p>
<p>General Course Description: In this class, students will explore the world of aeronautics, astronautics, flight and aerospace engineering design technology. The class explores the evolution of flight, flight fundamentals, navigation, control, aerospace materials, propulsion, space travel, orbital mechanics, ergonomics, remotely operated systems, and related subjects. Students will use 3D design software to help design related solutions of typical aerospace technology problems.</p>	
<p>College Prerequisite(s): None</p>	<p>HS/ROCP Prerequisite(s): None</p>
<p>Advisories/Recommendations: This is a course designed for 10th and 11th graders. It is expected that most students will be taking a comprehensive college prep curriculum. Students should have taken the Project Lead the Way's Principles of Engineering and Introduction to Engineering Design as a prerequisite.</p>	
<p>Course Content:</p> <ul style="list-style-type: none"> • Aerospace Engineering Career Awareness • Social responsibility and ethics • Safety practices and standards in the aerospace engineering environment • Communication, presentation skills and teamwork • Visualization and sketching techniques of vector force diagrams • History of Flight • Aerodynamics and Aerodynamics Testing (Physics, Geometry, Airfoils, Scale Models, Wind Tunnels, Data Collection and presentation, testing and data analysis to determine performance) • Aerodynamic Flight Systems (Flight Theory, Aircraft Design, Mathematics of flight theory, Gliders, GPS and ILS, Flight Safety) • Astronautics, Introduction to Rocketry (Mathematics of model rocket and engine performance, Predict, Measure and Control Rocket Thrust) 	

- Rocket performance (Thrust, Weight, Drag, Lift, Velocity, Acceleration, Altitude, Launch Angle)
- Instruments, tools and techniques used for direct and indirect measurements.
- Aerial Photography
- Orbital Mechanics (Conic Sections, Orbital Calculations)
- Space Life Sciences
- Life Support and Environmental Systems
- Aerospace Materials (Multiple layers, Composites, Heat Transfer)
- Aerospace Systems Engineering (Mechanical electrical and Interactive Computer Based Systems) Social and economic impacts of the aerospace industry and government programs

Competencies and Skill Requirements. At the conclusion of this course, the student should be able to:

- Define various careers available and terminology used in the fields of aerospace engineering and aerospace engineering technology
- Demonstrate understanding of the social, economical, environmental and ethical impacts of aerospace engineering
- Demonstrate safety practices and standards in the aerospace engineering environment
- Demonstrate ability to effectively communicate verbally, visually and in written format
- Collaborate in a diverse environment
- Apply visualization and sketching techniques in solving aerospace engineering problems
- Create basic aerospace engineering drawings and force diagrams utilizing industry standards
- Create and analyze basic aerospace systems that incorporate mechanical, thermal, fluid and electrical components to create simple electromechanical mechanisms, control devices and robotic systems.
- Use programmable systems and manual techniques to acquire data.
- Use a spreadsheet to analyze and interpret data
- Demonstrate proper use of various engineering instruments and tools (such as scales, calipers, micrometers, multimeters, thermometers) that may be used in the aerospace industry.
- Design and analyze basic static systems to measure lift drag and thrust
- Demonstrate the use and operation of a wind tunnel to analyze the performance of airfoils and the aerodynamics of other structures.
- Collect and interpret thrust versus time data.
- Demonstrate the ability to work as a team member and collaborate in a diverse environment.

Measurement Methods (quizzes, tests, homework assignments, etc.):

- Projects
- Homework
- Sketches
- Worksheets
- Engineering Notebook
- Portfolio
- Quizzes
- Tests
- Participation

Textbooks or Other Support Materials:

Textbooks:

Project Lead the Way™ provides the curriculum for this course, along with all required support materials; no other textbooks are required.

Software:

- Autodesk Inventor
- Fly to Learn Powered by X-Plane
- Aery
- EngineSim
- FoilSim
- Google Earth
- Vernier LoggerPro
- RobotC
- AGI STK
- Windows Live Movie Maker
- MDSolids
- Gravity Simulator

Materials:

- Engineering Notebook

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, *Aerospace Engineering*, with a grade of "B" or higher.
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 complete and submit the *Cerritos College Petition for Credit by Examination for Articulated High School Course* form to the Office of Educational Partnerships & Programs.
4. No more than 15 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

Eric Lee

Eric Lee (May 24, 2022 15:55 PDT)

May 24, 2022

Miroslav Micic

Miroslav Micic (May 26, 2022 08:15 PDT)

May 26, 2022

Faculty/Department Chair

Date

Instructor/Division Chair

Date

Ben Sanchez

Ben Sanchez (May 24, 2022 16:52 PDT)

May 24, 2022

Nick Real, Ed.D.

May 26, 2022

Principal

Date

Dean of Instruction

Date

John H. H.

May 26, 2022

E. (Rick) Miranda

E. (Rick) Miranda (May 26, 2022 09:23 PDT)

May 26, 2022

Superintendent

Date

Vice President

Date