



**Discipline: Manufacturing and Product Development**  
**Date Submitted: June 15, 2023**

**Cerritos College**  
**ARTICULATION AGREEMENT**

<p><b>Cerritos College Course:</b>  PMT 159 Injection Molding (2 units)</p> <p>Cerritos College  11110 Alondra Blvd.  Norwalk, CA 90650</p>	<p><b>High School Course:</b>  Plastics Composites Fabrication and Injection Molding</p> <p>Warren High School  8141 De Palma Street  Downey, CA 90241</p>
<p><b>General Course Description:</b>  This Capstone course provides students with theory and hands-on exposure to fabrication methods with high-tech materials. Areas of concentration will include composite structures, material choices, design of composite structures, surface bonding, fastener installation, inspection processes, and approved repair methods. Fabrication, safety procedures, and material handling are also covered. Additionally, the course introduces the fundamentals of set-up and operation of injection molding equipment as found in industry. Training on actual industrial equipment, and safe material and equipment handling, is stressed.</p> <p>The Plastics Engineering and Sustainability pathway encompasses plastic products' processing, design, development, and manufacturing. Student hands-on, industry-relevant practice includes working with materials properties and applications, polymer structure and characterization, sustainability, plastics processing and packaging, computer-aided design, and novel and emerging technologies.</p>	
<p><b>College Prerequisite(s):</b> none</p>	<p><b>HS Prerequisite(s):</b> Plastics Technologies</p>
<p><b>Advisories/Recommendations:</b> none</p>	
<p><b>Course Content:</b></p> <ol style="list-style-type: none"> <li>1. Introduction to Plastics Materials</li> <li>2. Processing of Plastics Materials</li> <li>3. Types of Molds</li> <li>4. Demonstration on Injection Molds</li> <li>5. Operation and Types of Molding Machines <ul style="list-style-type: none"> <li>• Production molds</li> <li>• Prototype molds</li> </ul> </li> </ol>	

6. Safety

- Safety requirements-practice operation of molding equipment
- Setup of molds on machines-safety considerations
- Electronic controls-safety considerations

7. Practices for Setting Up Molds

8. Injection and Compression Molding Machines and Electrical and Hydraulic Controls

9. Hydraulic Systems

- Set up hydraulic controls on machines

10. Molding fabrication materials

- Select molds
- Setup
- Operate molding equipment

11. Molding machine controls

- Time
- Temperature
- Pressure
- Cooling

12. Operation of Molding Equipment Test on Safety

- Hydraulic
- Electrical
- Mechanical

**Competencies and Skill Requirements.**

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

- Produce a part following industry standardized practices.
- Distinguish between three major thermoplastic materials used in industry.
- Demonstrate visual inspection of three parts for defects such as shrinkage, warp, and inclusions.
- Describe methods to increase manufacturing production rates in molding.

**Measurement Methods:**

- Projects
- Lab performance
- Quizzes Tests
- Final exam
- Student notebooks
- Participation

**Textbooks or Other Support Materials:**

- Essentials of Advanced Composites Fabrication and Repair, 2019 or current edition. ISBN 978-1619547629 Aviation Supplies and Academics, Inc. Publisher




**Procedures for Course Articulation:**

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

- Student has completed the articulated course listed above, *Plastics Composites Fabrication and Injection Molding*, with a grade of “C” or higher.
- Student must enroll at Cerritos College within two (2) years from the semester date in which the course was completed.
- 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 at Cerritos College.
- A maximum of 30 units may be awarded through 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**

	Jun 27, 2023	 <small>Miodrag Mikić (Jun 28, 2023 20:11 PDT)</small>	Jun 28, 2023
Faculty/Department Chair	Date	Instructor/Division Chair	Date
<i>Cari White</i>	Jun 28, 2023	 <small>Yannick Reut (Jun 28, 2023 20:23 PDT)</small>	Jun 28, 2023
Principal	Date	Dean of Instruction	Date
<i>John A. Garcia, Jr.</i>	Jun 28, 2023	<i>Wei Zhou</i> <small>Wei Zhou (Jun 29, 2023 08:28 PDT)</small>	Jun 29, 2023
Superintendent	Date	Vice President	Date