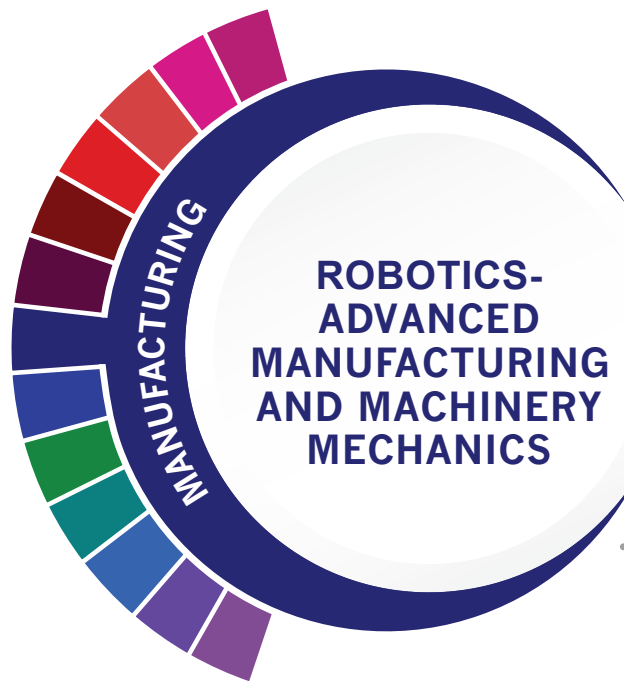


## COURSES



**LEVEL 1**

- Principles of Applied Engineering #8700
- Principles of Applied Engineering (Middle School) #8729

**LEVEL 2**

- Manufacturing Engineering Technology I #8721

**LEVEL 3**

- Robotics I #8710

**LEVEL 4**

- Robotics II #8730
- AND/OR
- Career Preparation I (3CR) #8009

## POSTSECONDARY OPTIONS

HIGH SCHOOL/INDUSTRY CERTIFICATION	CERTIFICATE/LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/DOCTORAL PROFESSIONAL DEGREE
FANUC Robot Operator 1	Engineer, Professional	Electro-mechanical Engineering/Technology	Electrical Engineering	
Mastercam Associate Level Certification	PMMI Mechatronics: Programmable Logic Controllers 1	Robotics Technology/Technician	Engineering, General	
NCCER Industrial Maintenance Mechanic	Certified Quality Technician	Instrumentation Technology/Technician	Industrial Engineering	
NIMS Industrial Technology Maintenance - Maintenance Operations	Plant Maintenance Technologist	Industrial Mechanics and Maintenance Technology	Mechanical Engineering	

Additional industry based certification information is available from the TEA CTE website.

For more information on postsecondary options for this program of study, visit TXCTE.org.

OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Electro-Mechanical Assemblers	\$30,160	951	9%
Electro-Mechanical Technicians	\$56,555	127	9%
Industrial Machinery Mechanics	\$49,816	3,788	27%

### WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

**Exploration Activities:**  
Participate in SkillsUSA and local STEM events

**Work Based Learning Activities:**  
Apprenticeship at a local business or industry  
American Welding Society

The Advanced Manufacturing and Machinery Mechanics program of study focuses on the assembly, operation, maintenance, and repair of electromechanical equipment or devices. Students may work in a variety of mechanical fields, gaining knowledge and experience in robotics, refinery and pipeline systems, deep ocean exploration, or hazardous waste removal. CTE concentrators may work in a variety of fields of engineering.



The Manufacturing Career Cluster® focuses on planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering.

Successful completion of the Advanced Manufacturing and Machinery Mechanics program of study will fulfill requirements of the Business and Industry Endorsement.

# Business and Industry Endorsement

(possible STEM Endorsement pending SBOE)



## Manufacturing

### Robotics - Advanced Manufacturing and Machinery Mechanics

(It is recommended students follow the program of study sequence level 1-4 as outlined by TEA.)

#### Principles of Applied Engineering (9-10) #8700

This course provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Working on design teams, students will use multiple computer hardware and software applications to conduct research, design and create projects, and present ideas related to biotechnology, electronics, robotics, and automation. Students will use appropriate tools and demonstrate safe work habits.

SEM: 2 CR: 1

#### Manufacturing Engineering Technology (10-12) #8721

Students will gain knowledge and skills in the application, design, production, and assessment of products, services, and systems and how those knowledge and skills are applied to manufacturing. Students will prepare for success in the global economy. The study of manufacturing engineering will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in a manufacturing setting.

SEM: 2 CR: 1

#### Robotics I (11-12) #8710

Through implementation of the design process, students will transfer advanced academic skills to component designs in a project-based environment. Students will build prototypes or use simulation software to test their designs. Additionally, students explore career opportunities, employer expectations, and educational needs in the robotic and automation industry.

SEM: 2 CR: 1

#### Robotics II (12) #8730

Students will explore artificial intelligence and programming in the robotic and automation industry. Through implementation of the design process, students will transfer academic skills to component designs in a project-based environment. Students will build prototypes and use software to test their designs.

PR: Robotics I

SEM: 2 CR: 1

#### Career Preparation (11-12) #8009

Students spend one hour in class each day and a minimum of 15 hours on the job each week. Some of the areas of employment include: clothing and home furnishings, child care, food service, hotel and hospitality services.

#### Extended Career Preparation (11-12)

Provides opportunities for students to participate in a work-based learning experience that combines classroom instruction with business and industry employment experiences.

PR: Successful completion of one or more advanced career and technical education courses that are part of a coherent sequence of courses in a career cluster related to the field in which the student will be employed.

SEM: 2 CR: 3