

AUTOMATION & ROBOTICS ENGINEERING TECHNOLOGY

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COURSE OBJECTIVE

Students will obtain education and skills in the field of Automation & Robotics Engineering Technology that will prepare them to enter the workforce or go on to post-secondary education.

COURSE DESCRIPTION

This three-year course focuses on all aspects of industrial and commercial machines and robotics, and is designed to prepare students for work in industry or continued education in engineering-related fields. The program includes design activities and instruction in the operation, set-up, maintenance, troubleshooting and repair of machines and systems found in commercial, packaging, medical and food production facilities where high tech equipment is used. Curriculum and instruction include the areas of Electricity, Electronics, Sensor Technology, Machine Operations and Maintenance, Industrial Electronics, Computer Machine Controls, Machine Repair, Motors and Controls, Fluid Power, Mechanical Components, Schematic Interpretation and Quality Control. Students are trained on a wide variety of tools for preventative maintenance and construction of equipment.

COURSE TOPICS

Computer Machine Controls | Control Systems | Electricity | Electronics | Hydraulics | Industrial Motor Controls
Industrial Safety | Machine Operations and Maintenance | Mechanical Drive Systems | Pneumatics
Programmable Logic Controllers | Robotics | Schematic Interpretation | Sensor Technology

REQUIRED SUPPLIES

Leather Work Boots (Steel-Toed Required) | Safety Glasses | Shop Shirt, (Maroon Pocket Tee)
Workwear Pants (Black)

TEXTBOOKS

AC/DC Principles
Industrial Mechanics
Introduction to Programmable Logic Controllers
NCCER Core and IEEE Texts
NFPA-70E

COOPERATING COMPANIES

AUMA
Ensinger, Inc.–Meadowlands, PA
Hennecke, Inc.–Bridgeville, PA
MSA–Cranberry Township
Perryman Company–Houston, PA

Rose Plastic–Coal Center, PA
Rockwell Automation
United Electric
VEKA, Inc.

SPECIALIZED SHOP EQUIPMENT

Allen Bradley Programmable Logic Trainers | Fanuc Robotic Welding Arm | Hydraulics Systems Trainer
Industrial Maintenance Cell | Mechanical Drive Systems Trainer
Siemens Programmable Logic Controller Trainers

CERTIFICATIONS

CareerSafe OSHA
National Institute for Metalworking Skills (Machine Operator 1)
NCCER Credentials
PA Skills Certificate

ARTICULATION AGREEMENTS

Community College of Allegheny County–Mechatronics Technology
Pennsylvania College of Technology–Automated Manufacturing & Machining
West Virginia Northern Community College–Mechatronics Technology

POST-SECONDARY TRAINING OPTIONS

California University of Pennsylvania–Mechatronics Engineering Technology; Robotics Engineering Technology
Community College of Allegheny County–Mechatronics Technology
Pennsylvania College of Technology–Automated Manufacturing
Numerous Engineering Programs–(Mechatronics, Industrial, Mechanical, Electrical)

POTENTIAL CAREERS

Automated Manufacturing Technician | Electrical Engineer | Industrial Engineer | Machine Operator
Machine Set-Up Operator | Maintenance Technician | Mechanic | Mechanical Engineer
Mechatronics Engineer | Packaging/PLA Technician | Parts Repair and Sales
Power Generation Plant Technician | Preventative Maintenance | Repair Technician | Robotics Technician

MECHANICAL & AUTOMATION SKILLS

Critical Thinking—Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Operation and Control — Controlling operations of equipment or systems.

Operation Monitoring — Observing and recording gauges, dials, or other indicators to make sure a machine is working properly.

Mathematics — Using mathematics to solve problems.

Equipment Selection — Determining the kind of tools and equipment needed to do a job.

Troubleshooting — Determining causes of operating errors and deciding what to do about it.

Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate and not interrupting at inappropriate times.

WAGES AND EMPLOYMENT TRENDS FOR ELECTRO-MECHANICAL TECHNICIANS

Median Wages (2020)	\$28.75 Hourly, \$59,800 Annually
Number of Jobs (2019)	14,600 Employees
Job Outlook (2019-2029)	3% (As Fast as Average)
Employment Change (2019-2029)	400

Source: *Occupational Outlook Handbook*

WESTERN AREA CAREER & TECHNOLOGY CENTER
AUTOMATION & ROBOTICS ENGINEERING TECHNOLOGY
2021-2022 Shop Requirements

Shop Uniform/Accessories

- Hat with Shop Logo (Optional)
- Leather Work Boots (Steel-Toed Required)
- Pocket Tee Shirt, Maroon (Use Enclosed Order Form)
- Safety Glasses (First Pair Provided by Western Area CTC)
- Workwear Pants, Black
- 3-Ring Binder (2-inch)

APPROXIMATE COST: \$120

Hats with the shop logo may be worn in the shop, but are not mandatory. No other hats are permitted. Order uniform pocket tee shirts and hats by mailing the enclosed order form to TNT Manufacturing or by ordering online at companycasuals.com/WACTC. All uniform orders are delivered to Western Area and will be distributed to students after the start of the school year.

Uniform pants may be purchased at any discount chain or department store. Workwear brands such as Dickies, Dockers and Carhartt are suggested. Lost or broken safety glasses may be replaced throughout the school year in the Main Office. Cost is approximately \$3.

Lockers are provided for students to change out of street clothes into their uniforms. Locks must be purchased from WACTC; cost is approximately \$6.

Clinical activities/learning situations may require that any body piercings be removed and any tattoos covered.

Students may be required to wear professional clothing for vocational student organization conferences, competitions and meetings.

All criteria is subject to change.