



## GARY D. CAREAGA

- USAF (Retired) Master Mechanic
  - Aerospace Ground Equipment
  - 7-Level Craftsman
- OSHA, HAZMAT Certified
- CPR, Self-Aid/Buddy Care Certified
- EPA Universal Refrigerant Certified
- Train the Trainer Instructor
- NC3 Certified Instructor
- STEM Certified Instructor
- NCCER Certified Instructor
- Associate of Applied Science
- Bachelor of Applied Science
- Master of Arts in Teaching
- Licensed in South Carolina and Tennessee, 6-12
  - Industrial Technology Education
  - Engineering and Technology
  - Social Studies/History

## COURSES AVAILABLE

- Mechatronics Integrated Technologies, Levels I-IV
  - SCDE Standards: 6110-6114
- Electronics Technology, Levels I-IV
  - SCDE Standards: 6133-6136
- Prerequisites: Pre-Algebra and Geometry (preferable Algebra 1)

## CONTACT

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**MECHATRONICS.** The trade name mechatronics is composed of “mecha” from mechanism and “tronics” from electronics; this career field, is the modern day equivalent of a *Millwright*. For centuries, millwright technicians harnessed the power of water in industrial mills and were “the primary master craftsman in all forms of power engineering and construction ... the most versatile and qualified craftsmen of any industrial mechanic.”<sup>1</sup> Mechatronics originated in the Advanced Manufacturing industry, “the heartbeat of most of the developed nations.”<sup>2</sup>

Mechatronics is a career field that merges a number of disciplines: Electrical, applied mechanics, hydraulics, pneumatics, HVAC, maintenance and repair, materials science, welding, fabrication and installation, CAD, automated production and PLC programming, analog and digital communications, and quality assurance. Students in this course, will learn from all of these disciplines. Highly skilled technicians, capable of critical thought and accomplished at troubleshooting on multiple platforms, are an essential component of today’s manufacturing environment. The demand for mechatronics technicians continues to grow worldwide. Depending on one’s level of experience, mechatronics technicians can expect to earn \$15-\$40 per hour; average pay in the U.S. is \$61,425 per year.<sup>3</sup>

**ELECTRONICS TECHNOLOGY.** Electricians got their start in the early 1700s. However, Man’s quest to understand electricity dates back to 600 BCE, not with Benjamin Franklin’s theory of flying a kite in a thunder storm, as popular folklore would have us believe. In this course, students are exposed to: The origins of electricity, fundamentals of power production for direct current (DC) and alternating current (AC), installing and testing electrical wiring and components, soldering, reading, interpreting, and creating electrical wiring diagrams and schematics. This career field continues to see a steady demand for qualified technicians, especially in Green/alternative energy. Qualified U.S. electricians earn an average of \$54,064 per year.<sup>4</sup>

## TEXTBOOKS

NCCER: Core Curriculum, Introductory Craft Skills  
SCDE/NCCER: Electronic Systems Technician  
SCDE/NCCER: Mechatronics

<sup>1</sup>“History.” *Eastern Millwrights*, Eastern Millwright Regional Council, 2020, [www.easternmillwrights.com/AboutHistory.xml](http://www.easternmillwrights.com/AboutHistory.xml).

<sup>2</sup>“The future of mechatronics engineering technology.” *ECPI University*, 2017, <https://www.ecpi.edu/blog/the-future-of-mechatronics-engineering-technology>

<sup>3</sup>“Mechatronic technician: Salary.” *Neuvoo*, 2020, <https://neuvoo.com/salary/?job=Mechatronic%20Technician#>

<sup>4</sup>“Electrician: Salary.” *Neuvoo*, 2020, <https://neuvoo.com/salary/?job=electrician+>