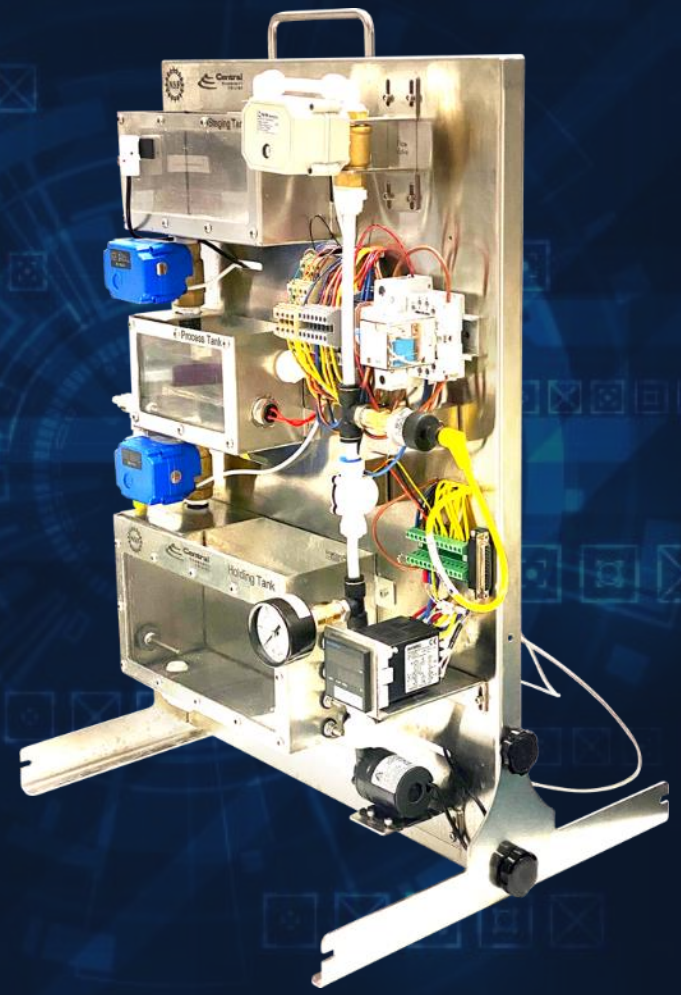
Welcome to the
NCATC Conference Session:

Hands-On Web Based Mechatronics Credit Courses for High Schools and Industry



Wednesday September 30, 2026

Central COMMUNITY COLLEGE

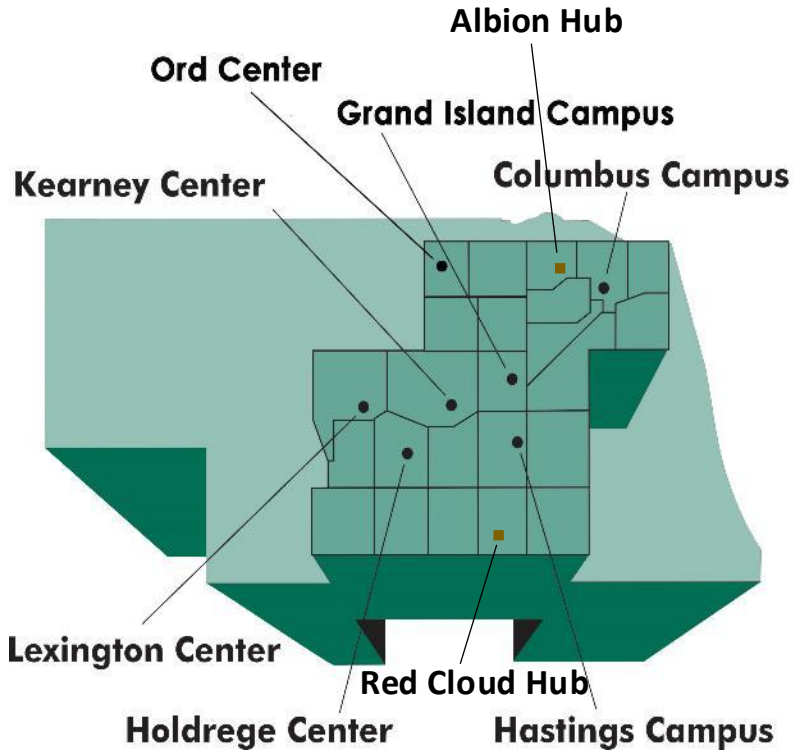
National Center for NEXT GEN MANUFACTURING
www.nextgenmfg.org

*NSF DUE ATE # **2500493**, **2335016**, and **2400652***

About CCC

Central COMMUNITY COLLEGE

- 3 Campuses
- 4 Learning Centers
- 2 Education Hubs
- 25 counties in central Nebraska
- 14,000 square mile service area
- 200 miles across our service territory
- Population 300,000
- Serving 71 High Schools
  50.7% less than 25 students



Goal

Increase the number of Mechatronics and Process Instrumentation Control technicians to meet workforce demands across the country by creating:

- distance education model
- high-quality/low-cost trainers
- new pathway to Mechatronics careers

Building Robust Mechatronics Pathways – Project BUMP

- Integrating school Mechatronics course model with business and Adult Education programs
- Help address current and future worker shortages
- Share best practices and lessons learned from working with different student populations and environments
- Develop a replicable model for hands-on course delivery with non-traditional student populations

Objective 1
Curriculum

- **Selecting courses.**
  - Concepts of Electronics I
  - Intro to Instrumentation
  - Intro to Programmable Controllers
  - Applications of Industrial Sensors

Objective 1
Curriculum



- **Establish a modular course format**
  - Discovery – Study Guide
  - Application – lab activities
  - Reinforcement – homework
  - Reflection - quiz

Objective 2
Business and Industry Leadership Team

Develop and utilize a Business and Industry Leadership Team (BILT) to:

- Develop curriculum
- Selecting equipment
- Professional development mentor-educators and students
- Promote career awareness
- Enhance project sustainability

Industry Partners

TEMPCO
ELECTRIC HEATER CORPORATION

Nebraska Ethanol Board

Rockwell Automation
expanding human possibility®

MARS
Petcare

BSE BORDER STATES
Supply Chain Solutions™

BD

FLUKE®

DISTAR INDUSTRIES

KatoCable
"Providing Innovative Assembly Solutions"

NAUGHTON
INDUSTRIAL SERVICES

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KLEIN TOOLS®
For Professionals... Since 1857™

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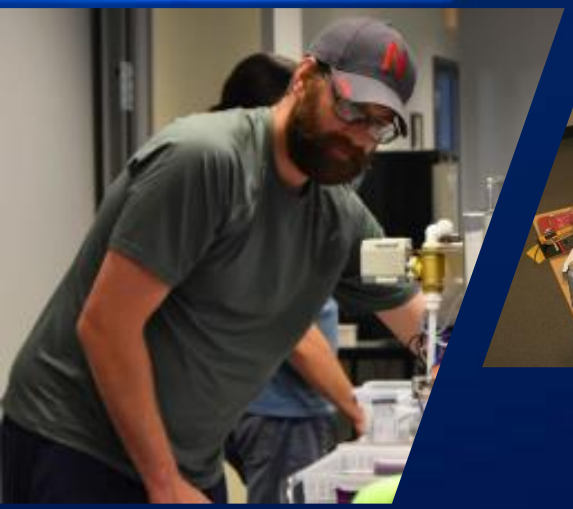
Cargill®

Objective 3 Recruitment of High Schools and Faculty Professional Development

Establish early college Mechatronics and Instrumentation pathway at a distance for rural high schools by identifying, recruiting and supporting high school faculty to act as facilitators.



Professional Development



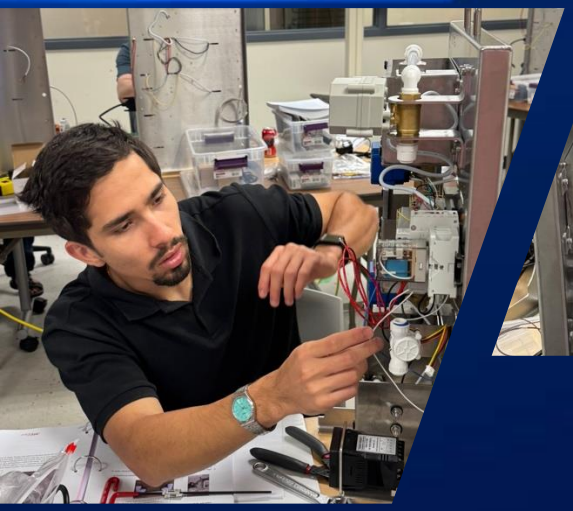








Professional Development











National Center for NEXT GEN MANUFACTURING

Central COMMUNITY COLLEGE

NSF



Summer Professional Development Opportunity for Hands-On, Web-Based Mechatronics Courses for High Schools

The National Center for Next Generation Manufacturing and Central Community College in Columbus, Nebraska, are partnering to offer Professional Development opportunities with high school and college educators during the summer of 2027.

If you are interested, please complete and return the information below as soon as possible, as class size is limited. Courses are designed to be taken in sequence; please indicate which courses you would like to attend. Attending as a community college-high school team is encouraged to foster dual-credit and hands-on learning initiatives.

This material is based upon work supported by the National Science Foundation under DUE ATE # 2037491, 2500493, & 2335016

Equal Opportunity Institution

COURSE OFFERINGS

All courses include course materials, a trainer, and a stipend which includes travel expenses.

☐ **Course One: Concepts of Electronics**

Tuesday, June 8 through Friday, June 11

4 Days
Stipend of $1,800 which includes travel expenses
Trainer valued at over $550



☐ **Course Two: Intro to Instrumentation**

Monday, June 14 through Thursday, June 17
4 Days
Stipend of $1,800 which includes travel expenses
Trainer valued at over $1,300



☐ **Course Three: Intro to PLCs**

Tuesday, June 22 through Friday, June 25
4 Days
Stipend of $1,800 which includes travel expenses
Trainer valued at over $1,750



☐ **Course Four: Application of Industrial Sensors**

Monday, June 28, through Wednesday, June 30
3 Days
Stipend of $1,500 which includes travel expenses
Trainer valued at over $1,950



Please return to :

CENTRAL COMMUNITY COLLEGE:
4500 63rd Street
Columbus, NE 68601
workforce@cccneb.edu
402-562-1425

Organization Name: _____

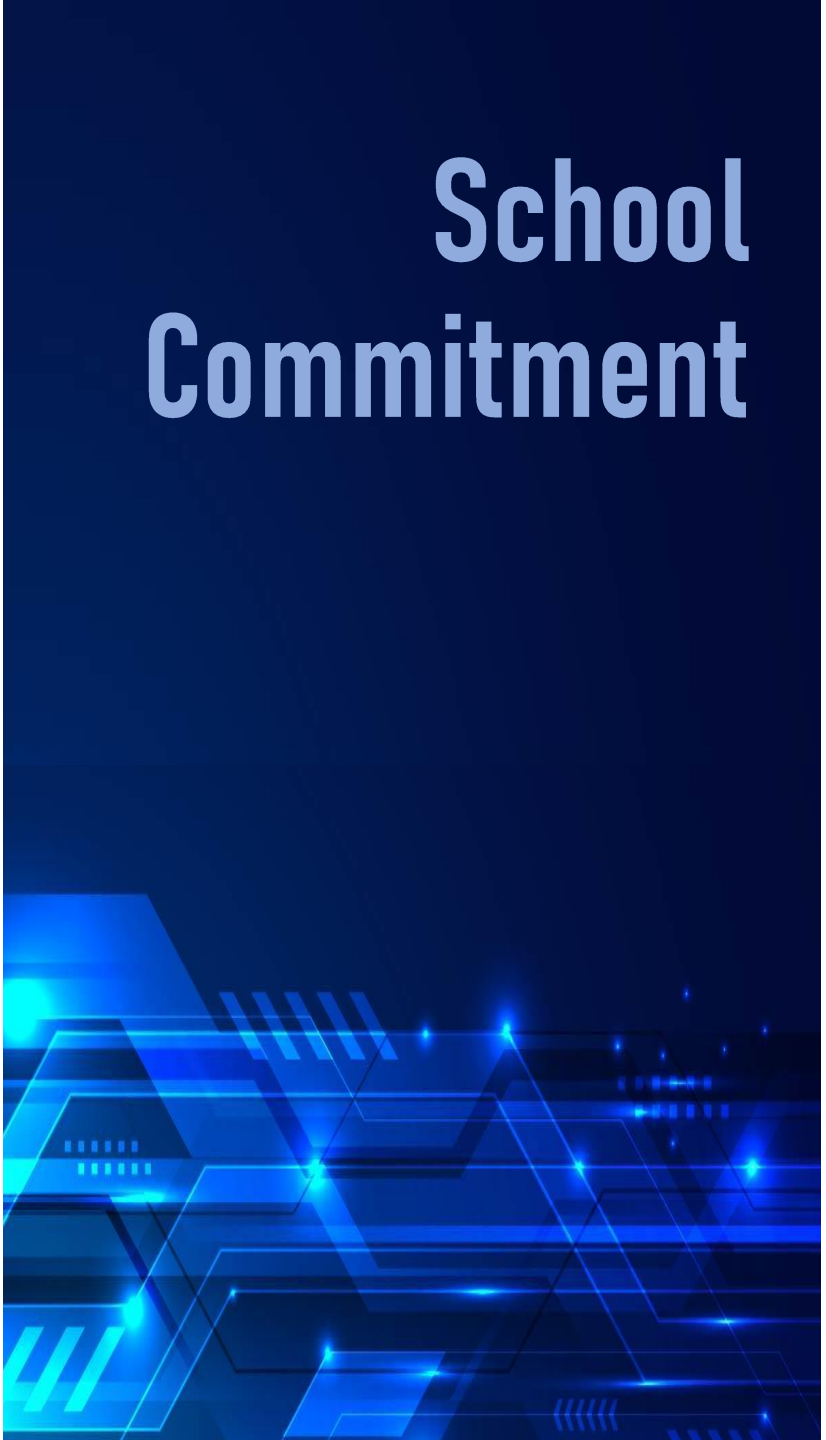
Name of Person Interested: _____

Phone: _____ Email Address: _____

Mailing Address: _____

City: _____ State: _____

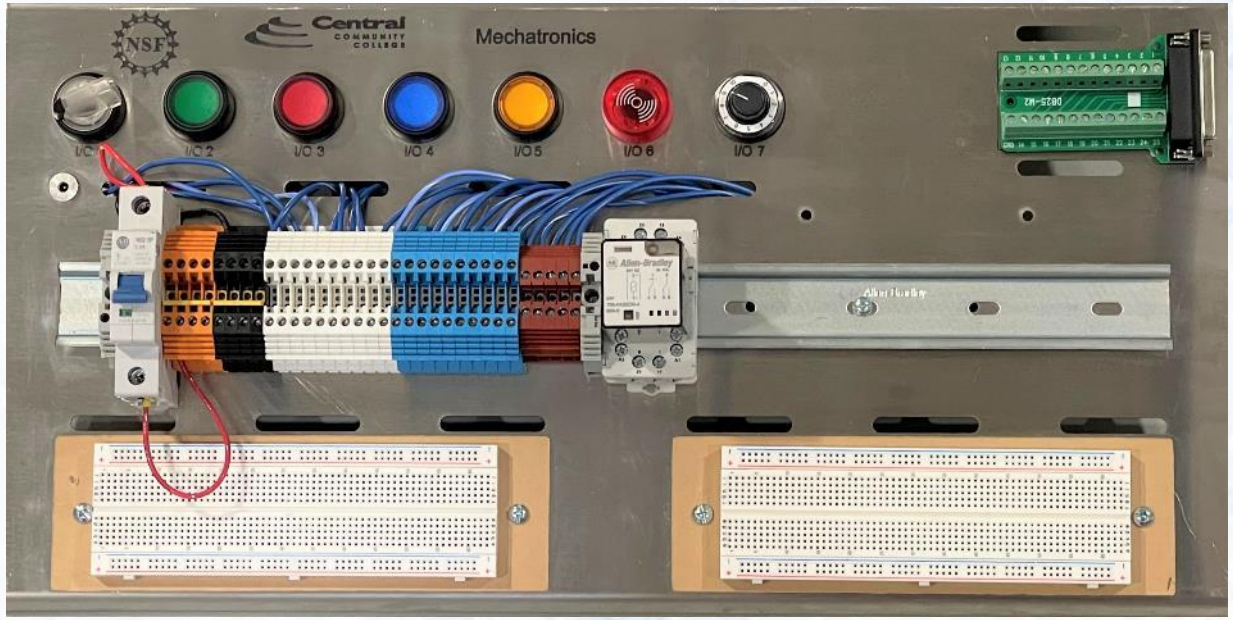
School Commitment



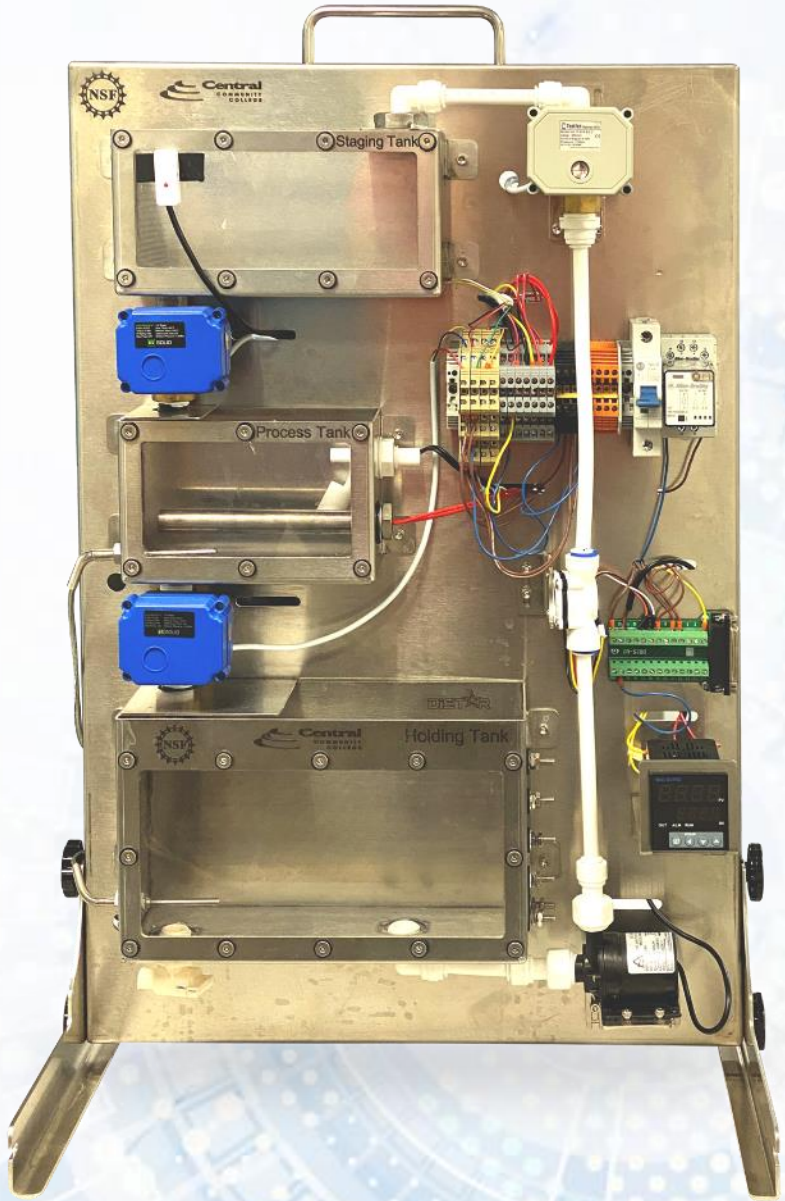
- Assign a teacher/facilitator to the classroom
- Commit classrooms and storage areas
- Have computers available to students
- Market classes to students
- Offer one course each semester the first year
- Offer two courses each semester the second and third year
- Attend six to eight days of professional development each year
- Only available to students interested in college credit


DISTAR INDUSTRIES
Nebraska Ethanol Board
KLEIN TOOLS
Parker
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MARS Petcare
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NAUGHTON INDUSTRIAL SERVICES
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BUFFALO COUNTY Economic Development KEARNEY • NEBRASKA
South Central COLLEGE
Central COMMUNITY COLLEGE

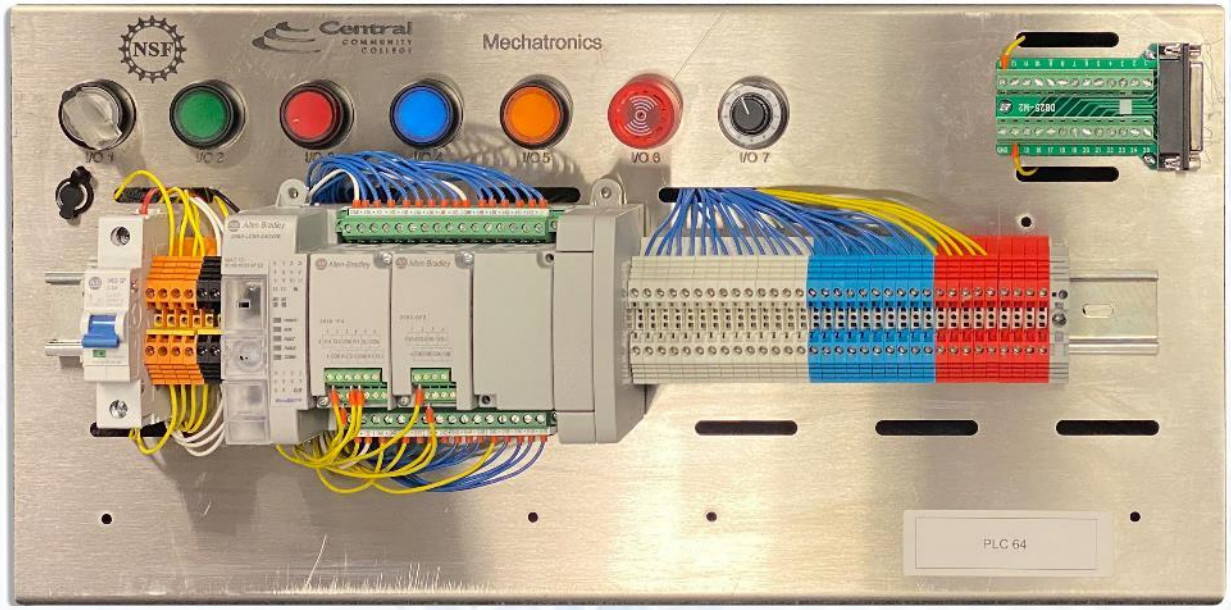
Concepts of Electronics I Trainer



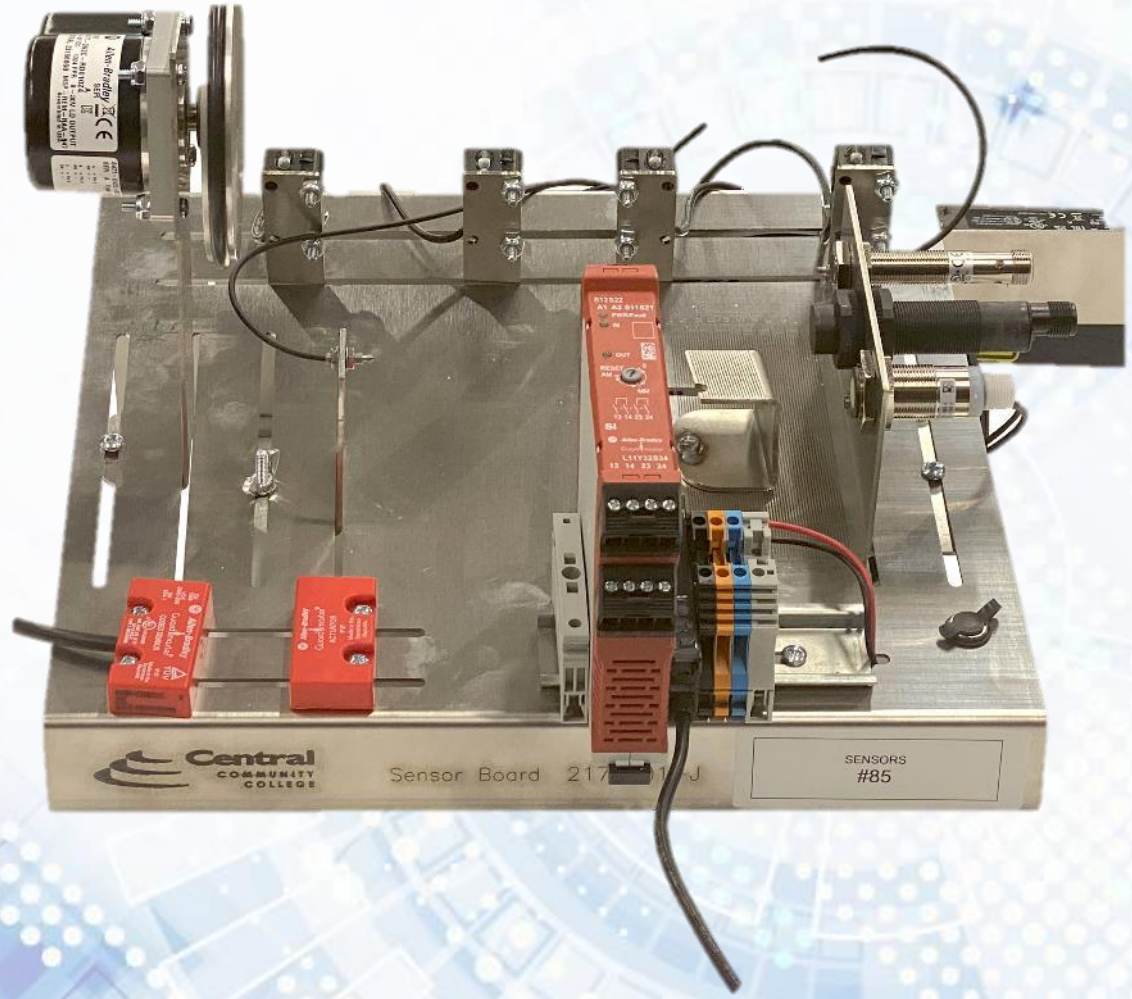
Introduction to Instrumentation Trainer



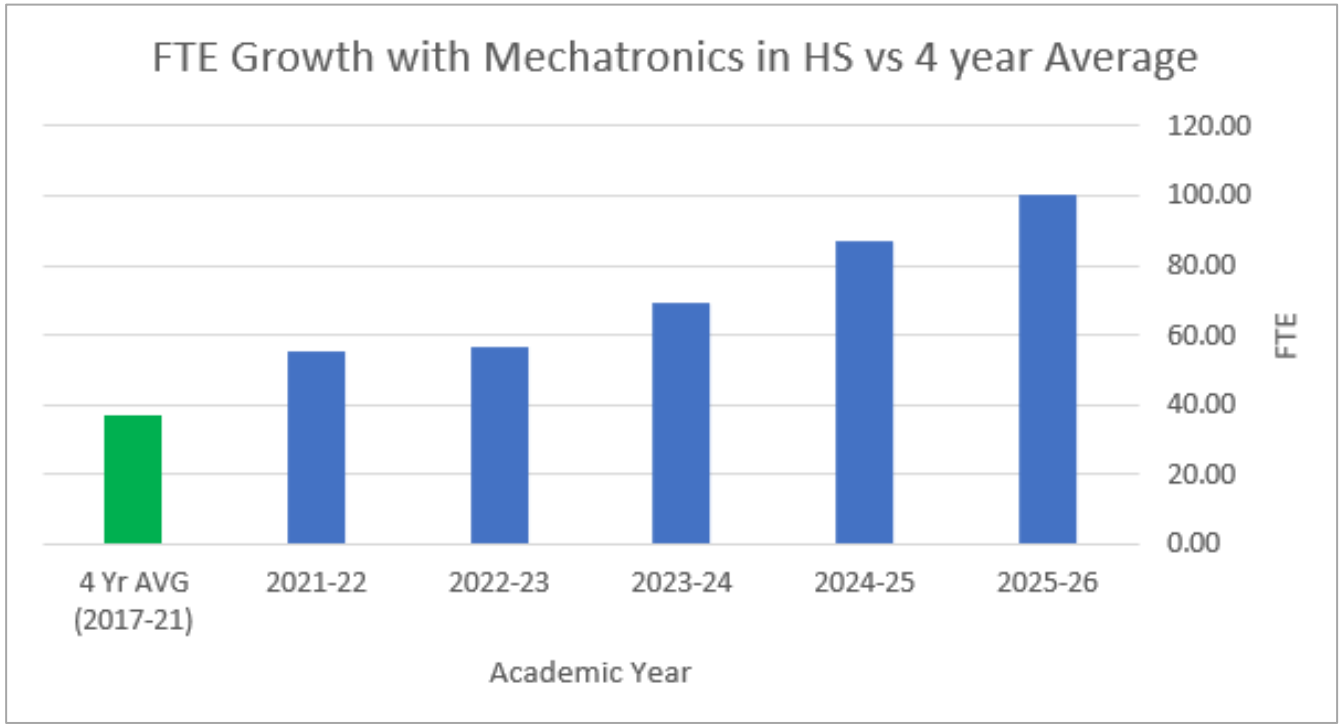
Introduction to PLC Trainer



Industrial Sensors Trainer

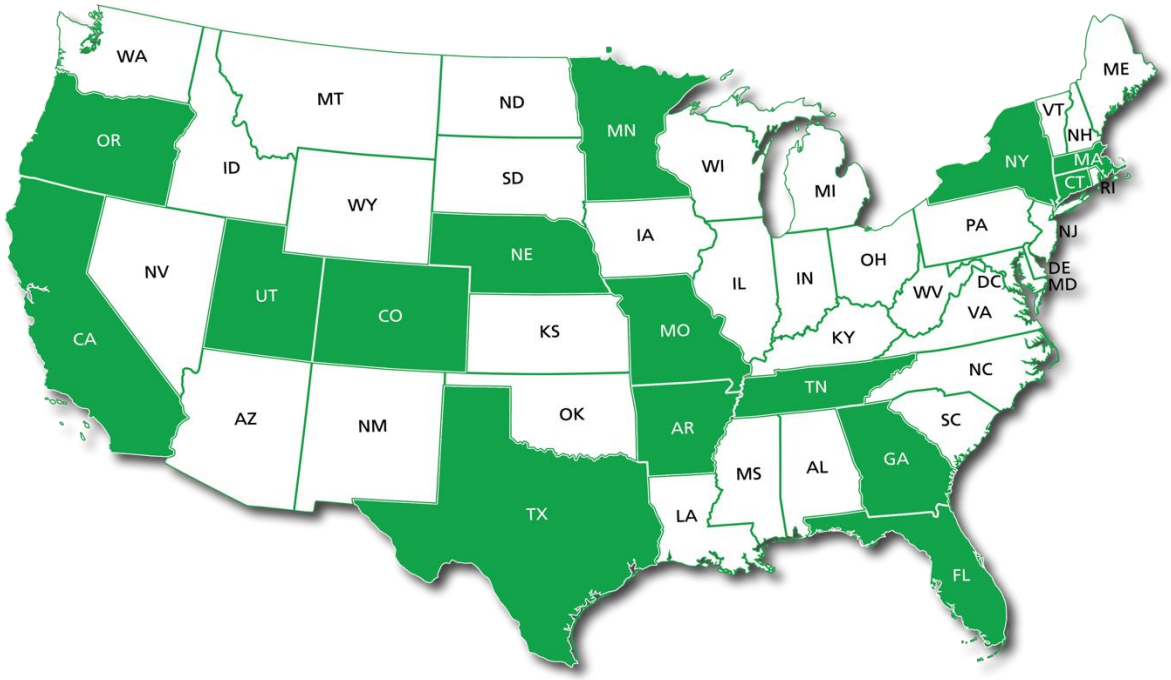


Central Community College - Figures



- **Nebraska figures:**
  - **Mechatronics average starting wage $37/hour**
  - **173% program enrollment growth in five years (over 100 FTE)**
  - **21 high schools in 2025-2026 school year**
  - **More than 220 students**

Colleges and High Schools Across the Country



- Mechatronics Professional Development - Educators from 15 States and Puerto Rico
- Classes delivered in 43 high school
- 400+ students enrolled across the U.S.

Lessons Learned and Best Practices for Web-Based Courses

- Selecting facilitators
- Industry involvement
- Hands-on trainers
  - One-to-one
- Identify adjunct instructors early
- Web-based courses open new opportunities
  - Waiving tuition
- Exposure to Mechatronics

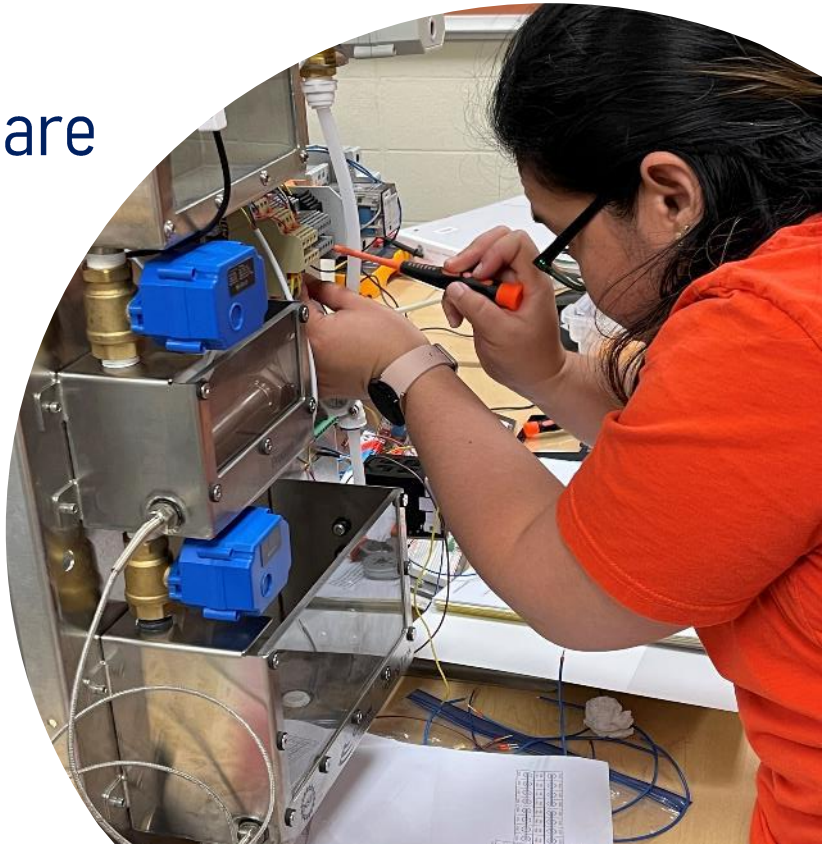


Lessons Learned and Best Practices for Web-Based Courses

- Freeing up faculty has been difficult
  - Serving internal students
- Building rapport with schools is critical
- Use of laptops versus Chromebooks or tablets (e.g. – iPads)
- Sharing grades with high schools
  - Waiver forms
- Storage space in high schools
- Develop/utilize videos (ideally less than 3 minutes)
- Minimize reading requirements – students tend to disengage

Lessons Learned and Best Practices for Web-Based Courses

- Register students for classes as early as possible
- Establish a consistent format of modular course delivery
- Only allow students who are interested in credit
- High school facilitators are limited –
  - “They already have a full schedule”



For more information, please contact:

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ddavidchik@cccneb.edu

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