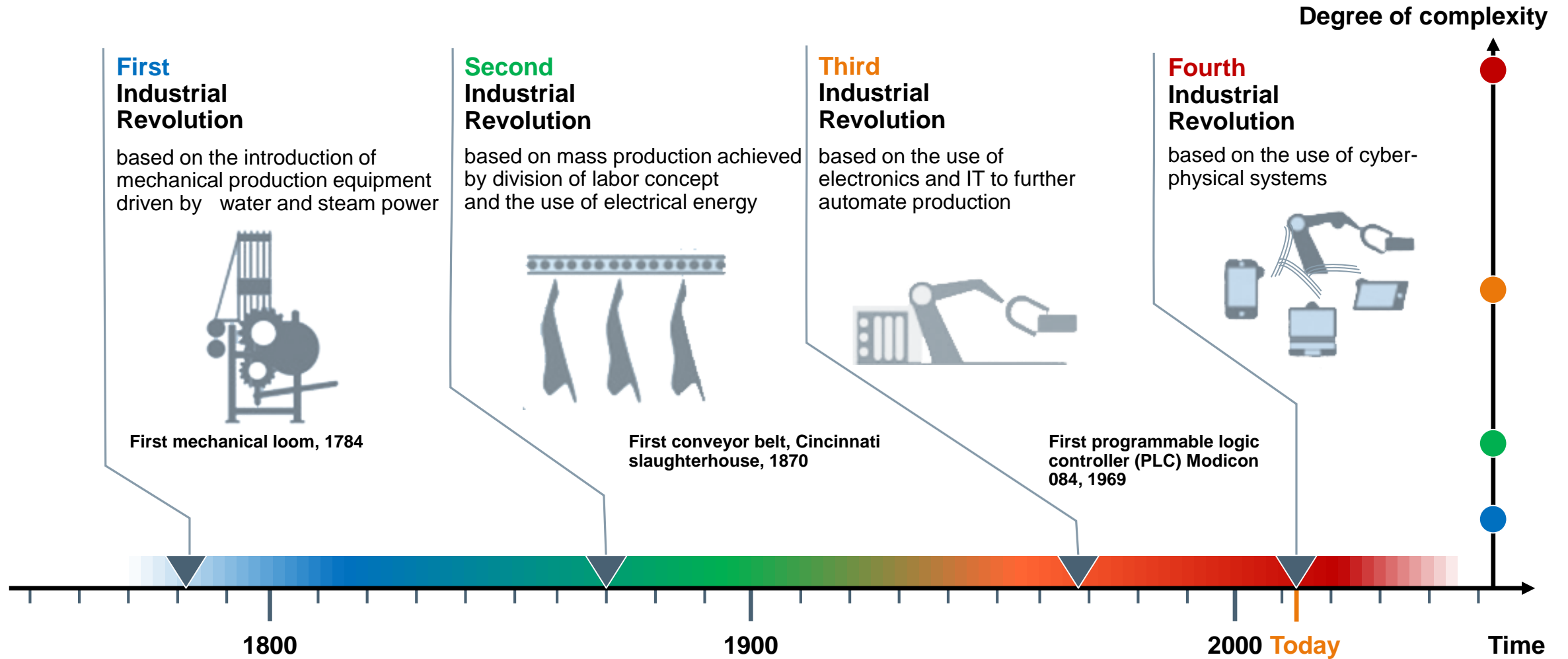


# Making tomorrow's workforce fit for the future of industry

Siemens Mechatronic Systems Certification Program (SMSCP)  
Siemens Cooperates with Education (SCE)

# Industrial Evolution



Source: DFKI (2013)

Unrestricted © Siemens 2019

# Transforming Skill Sets Over time



## Top 10 Skills

...in 1970

Writing  
Computational Skills  
Reading Skills  
Oral Communications  
Listening Skills  
Personal Career Development  
Creative Thinking  
Leadership  
Goal Setting/Motivation  
Teamwork

...in 2015

Complex Problem Solving  
Coordinating with Others  
People Management  
Critical Thinking  
Negotiation  
Quality Control  
Service Orientation  
Judgment and Decision Making  
Active Listening  
Creativity

...in 2018

Complex Problem Solving  
Critical Thinking  
Emotional Intelligence  
Cognitive Flexibility

...in 2022

Analytical thinking and innovation  
Active learning and learning strategies  
Creativity, originality and initiative  
Technology design and programming  
Leadership and social influence  
Emotional intelligence  
Reasoning, problem solving and ideation  
Systems analysis and evaluation

Source: Fortune 500 Most Valued Skills; Future of Jobs Survey, World Economic Forum.

Unrestricted © Siemens 2019

# Changes in Students' Learning Expectations

## MEET THE MODERN LEARNER

As training moves to more digital formats, it's colliding with new realities in learners' jobs, behaviors, habits, and preferences.

Today's employees are overwhelmed, distracted, and impatient. Flexibility in where and how they learn is increasingly important. They want to learn from their peers and managers as much as from experts. And they're taking more control over their *own* development.



### UNTETHERED

Today's employees find themselves working from several locations and structuring their work in nontraditional ways to accommodate their lifestyles. Companies are finding it difficult to reach these people consistently and even harder to develop them efficiently.



### ON-DEMAND

Employees are accessing information—and learning—differently than they did just a few years ago. Most are looking for answers outside of traditional training and development channels. For example:



### COLLABORATIVE

Learners are also developing and accessing personal and professional networks to obtain information about their industries and professions.



### EMPOWERED

Rapid change in business and organizations means everyone needs to constantly be learning. More and more people are looking for options on their own because they aren't getting what they need from their employers.



Sources:  
 \*The Overwhelmed Employee: Simplify the Work Environment" Deloitte University Press  
 \*The Knowledge Worker's Day" IBM  
 \*Make Time for the Work from Mommy" Harvard Business Review  
 \*Collaboration & Social Tools Drive Business Productivity, Costing Millions in Work Interruptions" Forrester  
 \*We're Creating a Culture of Distraction" Zinnov.com  
 \*Study Says We Unlock Our Phones a LOT Each Day" iStock  
 \*Workday" Causes Distraction and Stress at Work" iStock  
 \*If Training Gets an Extreme Makeover" Computerworld  
 \*Workforce Performance Doesn't Really Matter to Users And By How Much?" University of Massachusetts  
 \*The Mobile Workforce Preparation 2011 - 2015" IDC  
 \*Analytics & Real-time Strategy" IBM Strategy Group  
 \*The Rise of the Extended Workplace" Accenture  
 \*Engaging Disengaged Learners" Research Alliance  
 \*Just-in-time Information through Mobile Connections" Pew Research  
 \*Work at a Google Peak: Any Company Can Initiate Employee-to-Employee Learning" Fast Company

# The Evolution of Jobs

## Standard jobs

Roles that perform work using a specified and narrow skill set. Generally organized around standard processes.

## Hybrid jobs

Roles that perform work using a combination of skill sets drawing on both technical and uniquely human skills. Historically, these types of skills have not been combined in the same job.

## Superjobs

Roles that combine work and responsibilities from multiple traditional jobs, using technology to both augment and broaden the scope of the work performed and involve a more complex set of domain, technical and human skills.

# Georgia Jobs

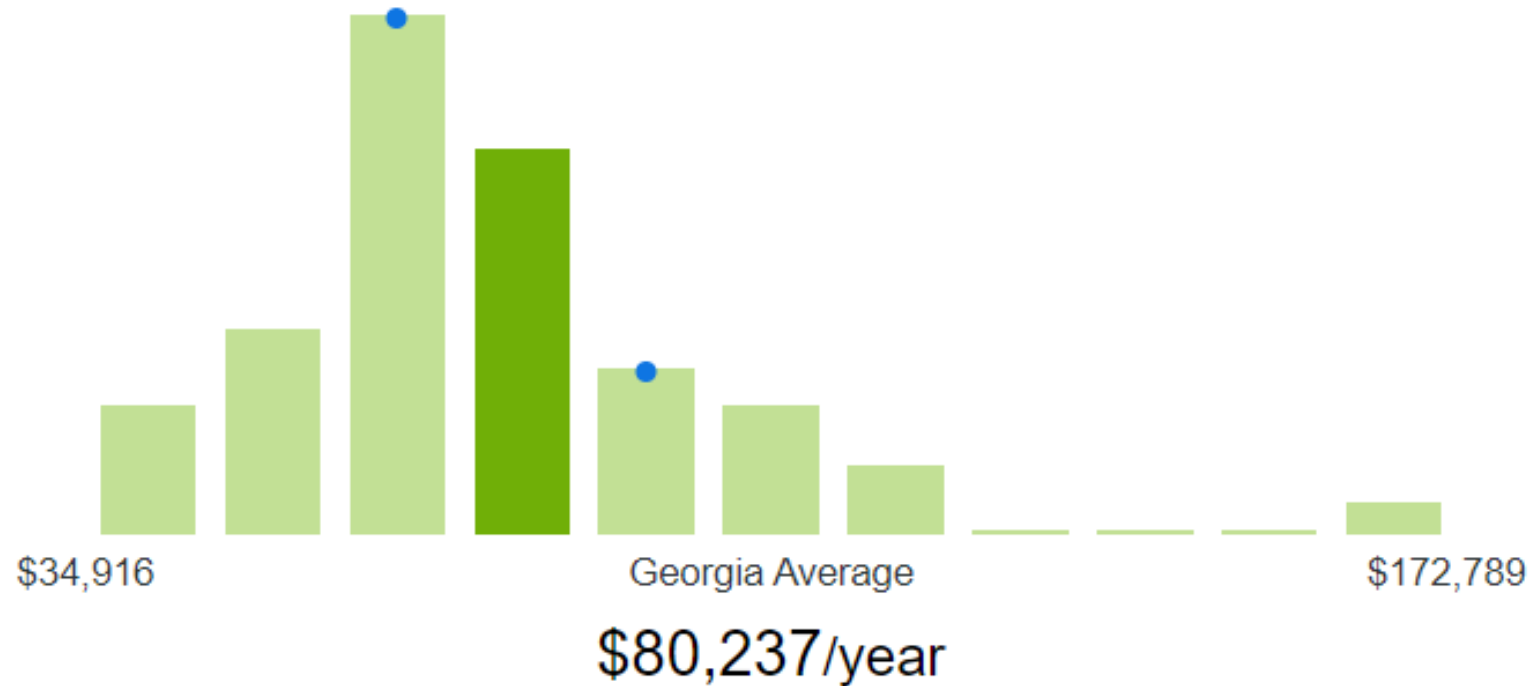


**According to the Workforce Division of Georgia's Department of Economic Development, these are the top-10 high-demand occupations in the state.**

- Business Management and Operations.
- CNC Operator.
- Computer Programmer.
- Electric Engineer.
- Machinist.
- Maintenance Technician.
- Manufacturing/Production Technician.
- Mechanical Engineer.

# Industrial Automation Salary Ranges in GA

How Much Do Industrial Automation Engineer Jobs Pay per Year in Georgia?



# Siemens Cooperates with Education provides value to students, instructors, schools and industrial companies



## SCE Offerings

	
Curriculum	Trainer Packages
	
Workshops	Support



- 1 Same technology used by industry, deeply discounted for schools
- 2 Job-driven competencies, validated by industrial employers
- 3 Credentials for instructors and students
- 4 More than 500 U.S. academic institutions
- 5 Part of Siemens global SCE network



# Industry Relevant Curriculum Applied Across Education



## High School

- Introductory Programming
- Electronics
- Maintenance
- Manufacturing
- Mechatronics



## Community College

- Machining / CNC
- Engineering Technology
- Electrical Automated Technology
- Adv Manufacturing
- Mechatronics



## University

- Mechatronics Approach
- Hands-on Engineering
- Industry-driven Research



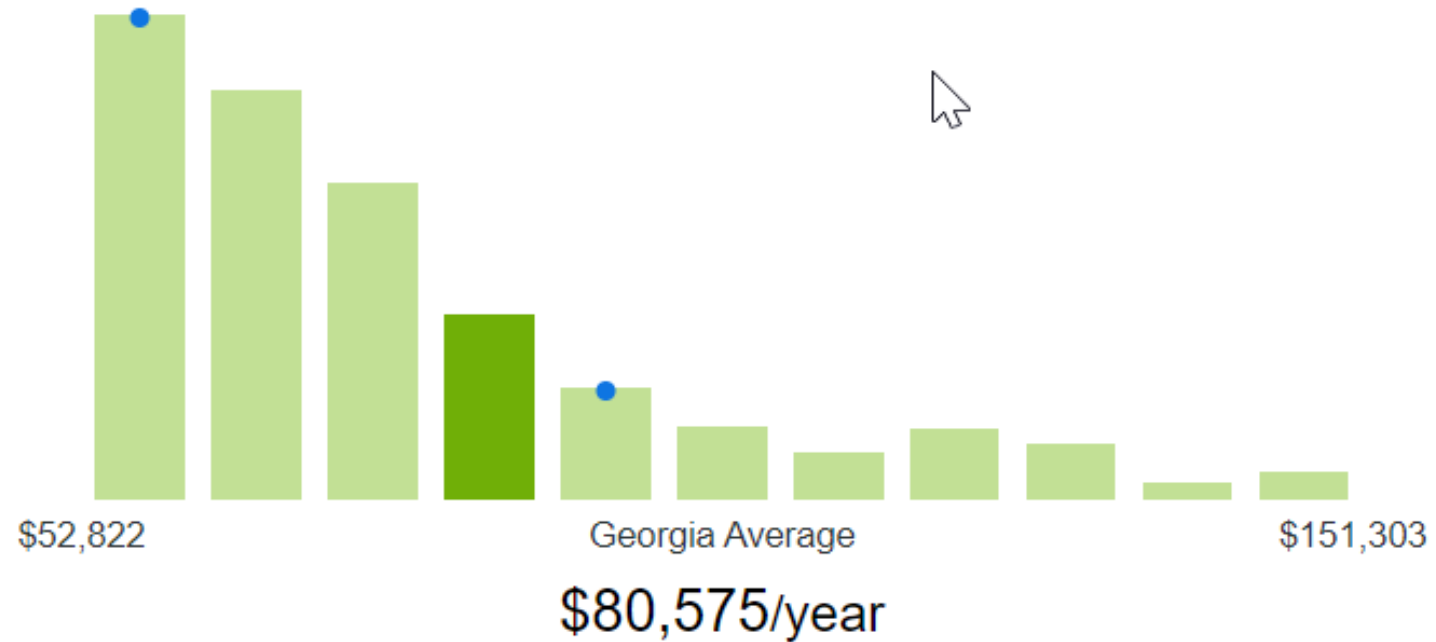
## Certificates of Completion

## Apprentice Programs Career Centers



# Mechatronics Salary Ranges in GA

How Much Do Mechatronics Engineer Jobs Pay per Year in Georgia?



# Level 3: Certified Mechatronic Systems Professional (Engineer)

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*Ingenuity for life*

## Prerequisites

- Technical education or experience equivalent to SMSCP Level 1 and 2
- Basic project and process management knowledge as covered in SMSCP Level 2 Course 6
- SMSCP Level 1 and Level 2 certifications are highly recommended

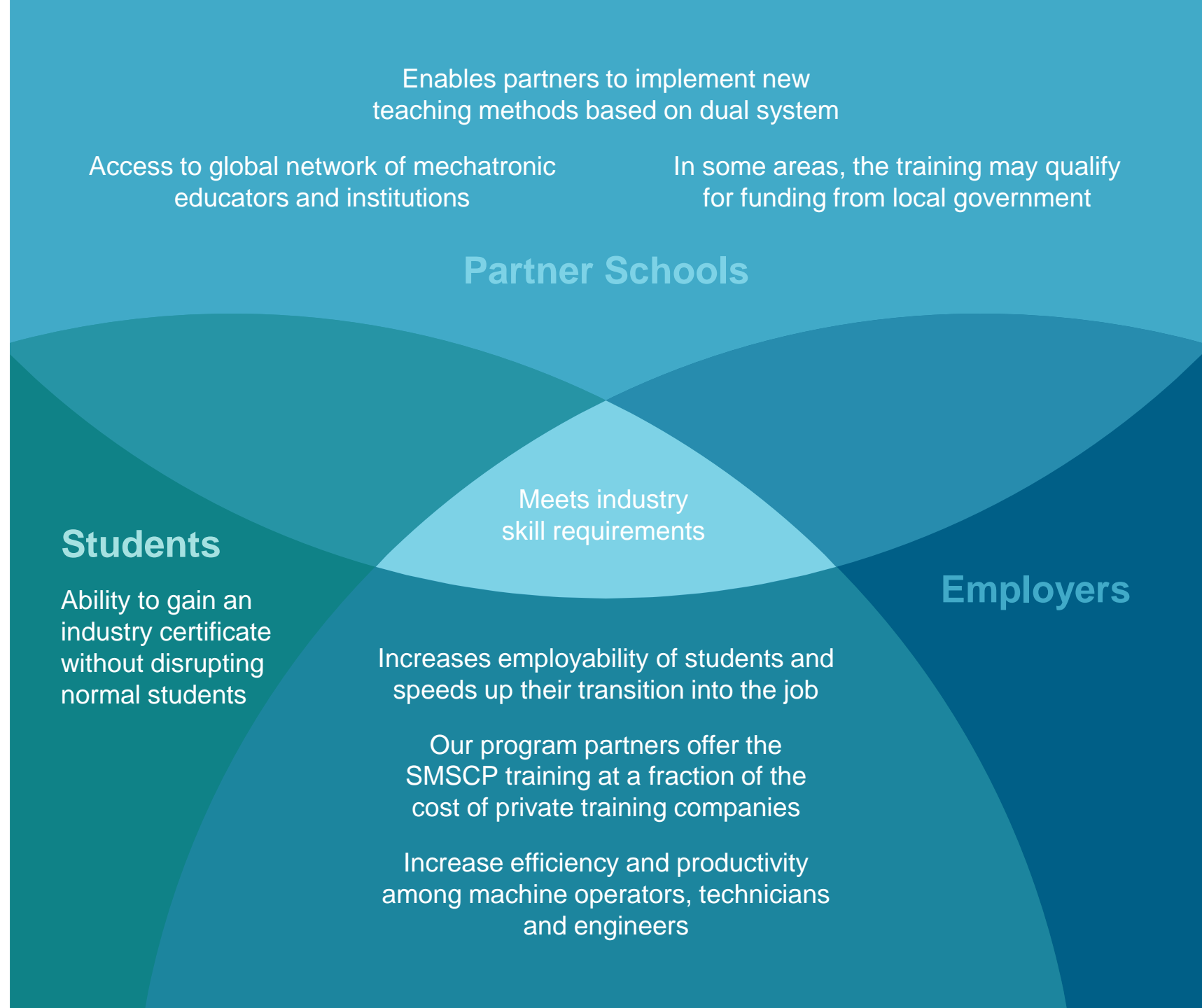
## Curriculum

- Course 1: Project Management
- Course 2: Technical Systems Project

## Job profile

- Skilled designer of and expert on complex mechatronic systems
- Apply selected project and system engineering practices
- Work locations:
  - engineering office environment
  - workshops
- project teams which design, manage and improve complex mechatronic systems

## Benefits for partner schools, students and employers



# How to get started

## Prerequisites for partner schools



**Successful instructor certification for at least two faculty**



**Mechatronic system and content implementation**

- Equipment meeting SMSCP hardware requirements
- Implementation plan to integrate SMSCP content and didactic methodology into chosen program



**Local agreement with Siemens US**  
(MoU or partnership contract)



**Student Certification**

Only SMSCP partner schools can offer our online certification exam to their students

# Success for Incumbent Workers: Western Nevada College



- Training for existing manufacturing workforce and traditional students
- Small and intense training classes accelerated to as little as 1 month
- Training focuses on the methodology of thinking like a problem solver, not just a task worker
- WNC offers a combination of online and hands-on learning

## Students working in manufacturing, industry earn Siemens credential at Western Nevada College

Local | January 6, 2018

Western Nevada College



Yerington High School students, from left, Sam Cota, Pedro Maldonado, A Sam, Ryan Barnes and Luke Stokes completed the OSHA 10-hour safety course for Construction Education and Research safety and core curriculum certification at Western Nevada College's Jump Start Career and Technical Education program during the training. Construction instructor Robert Ford, center, led the training.



# Consistent Job Placement: Patrick Henry Community College



- Industrial Electronic Technology program awards SMSCP credential
  - Siemens Mechatronics System Certification Program
- The 17-person class received 62 industrial electronics technology credentials this semester
- 2/3 of the class are receiving associates in IET along with certificates in VFD, PLC and additional career studies

## Four Years and Counting: Mechatronics program sees 100 percent pass rate

Bulletin Staff Report May 22, 2017



From left to right: (front row) Sebastian Barberena, Patrick Price, Erik Price, Jeffrey Bray, Christopher Cooper, Taylor Aaron, Ricardo Mitchell. (Back row) Adam Jones, Jeffery Evans, Ethan Adams, Joshua Hale, Kendall Ledyard, Jesus Yepez, Francisco Garcia. (Not Pictured) Chuck Perry, Bryan Hundley, Sharon Clark.



# Success in Partnership: Lewis & Clark Community College + NCERC

**SIEMENS**  
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- Hands-on training with full replica DCS system and pilot plant featuring PCS 7 and SIMIT
- Training model developed in collaboration with local workforce boards increases employability of available workers
- New Refinery Operator Apprenticeship combines on-the-job training, classroom education, and training on a digital twin of the pilot plant

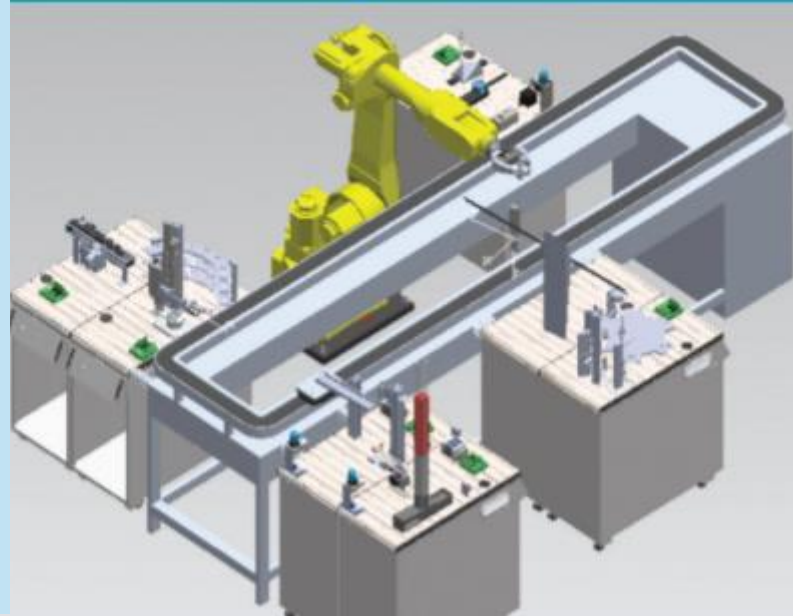




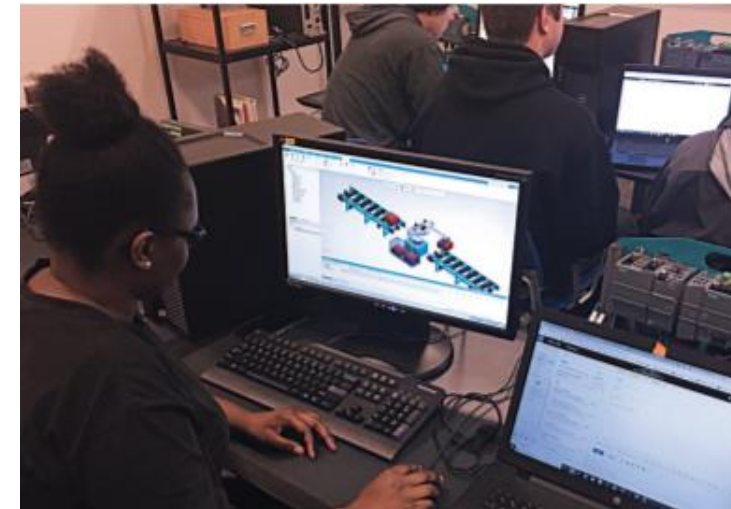
# Success with Digital Manufacturing: Kennesaw State University

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- Technologies available to 3 degree programs including engineering and engineering technology
- Software helps students create digital twins of integrated manufacturing
  - Tecnomatix and TIA Portal



- *“The hands-on approach enables students to understand and apply advanced manufacturing concepts including the Internet of Things, digital twins, collaborative robotics and Industry 4.0”*
  - Dr. Guerra-Zubiaga, KSU Mechatronics



# Questions?

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