WORKFORCE

READING AREA COMMUNITY COLLEGE

SCHMIDT TRAINING & TECHNOLOGY CENTER

FALL 2023

Ten South Second Street, Reading, PA | 610-372-4721 | 1.800.626.1665 | racc.edu

WORKFORCE DEVELOPMENT

The Workforce Development Team at Reading Area Community College is dedicated to providing a continuum of learning in

- Advanced manufacturing skills
- CNC Machining and Manual Machining
- Information technology (IT)
- Market knowledge
- Business Critical Skills
- Business performance and workforce readiness that meets the demands of the local and regional labor market

Manufacturing, IT and business professionals provide training using a hands-on learning approach. The staff of Workforce Development understands employers' technology challenges, operating systems and business performance objectives. We understand that business and industry growth is increasingly centered on new IT applications in addition to advanced technical innovation. We know that successful employers must find new ways to produce and deliver products and services to customers who will purchase these goods at prices that will provide profit. The offerings of the Schmidt Training and Technology Center provide ***customized senior leadership and employee training*** that adjusts to the unique and changing needs of business and industry employers.

2023 BELLWETHER COLLEGE CONSORTIUM Finalist

Reading Area Community College was selected as a Bellwether Finalist at the 2023 Community College Futures Assembly. The experience of being with thirty of the best community colleges in the nation was an outstanding experience.

We shared best practices and showcased scalable, replicable, and equity-focused programs with documented success. RACC's presentation focused on our customized training initiative and how we responsibly addressed the need of a global agricultural equipment manufacturer for a rapid turn-around training program for newly hired Computer Numerical Control or CNC operators. As a proactive community partner, we were able to provide training of CNC machine operators while maintaining the integrity of the course, ***in half the usual time.***

YOU ASKED,
WE RESPONDED!
RACC is now a PMI preferred training vendor!

see page 14 for our new project management prep class.

Wellness in the Workplace

NEW

The past few years have been tough on just about every industry. During the pandemic, people either became more aware of their physical and mental health, or lost sight of it. We are proud to announce the approach to create a sense of belonging within your organization.

Please join us on
Tuesday, September 19, 2023
from 8:30am – 11am
for a **free session**:
"Wellness in the Workplace"
Instructed by Ampersand Intergrated wellness.

Registration required
at sttc.eventbrite.com.

See page 7 for our new wellness in the workplace prep class.

WORKFORCE
READING AREA COMMUNITY COLLEGE
SCHMIDT TRAINING & TECHNOLOGY CENTER

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ESL for the Workplace

Time: 10 – 12 Weeks
Customized training at your facility

This training is designed to improve English language skills for employees that are non-native English speakers. ESL for the Workplace focuses on engaging employees in conversations to help them communicate more effectively with confidence in the workplace. This training is structured in a way to help employees improve reading, writing, and speaking English, which leads to increased productivity and builds a better rapport with co-workers. Training can be customized to meet company needs which can include specific workplace scenarios. Call today for more information.

Spanish for the Workplace

Time: 4 Weeks
Customized training at your facility

Spanish for the Workplace is an introductory training that focuses on Basic Spanish language skills for the workplace. This training is designed to help bridge the gap between English and Spanish speaking supervisors and co-workers leading to more effective communication. Spanish for the Workplace can be customized to meet the needs of real-life workplace scenarios and processes. Spanish language skills training can include basic workplace conversations, job expectations and performance discussions, Safety and Emergency dialogs, and many more scenarios. These sessions also include an introduction to the Hispanic Culture.

For more information contact Auria Bradley, *Associate Vice President, Workforce and Continuing Education* at *abradley@racc.edu* or call *610.372.4721 Ext. 5120*

Skill Building for Supervisors and Team Leads

Time: 7 Hours
Price: $595
Date: 9/28/23 and 12/7/23

This workshop presents new supervisors and team leads with proven best practices to successfully coach and lead highly productive teams. The supervisor / team lead will learn how to understand and supervise different generations. Understanding this allows the new supervisor / team lead to coach effectively, give and receive constructive feedback using the proper communication skills, conflict management for dealing with difficult behaviors, and effective time management strategies.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Business Communications/Time Management

Time: 7 Hours
Price: $595
Date: 10/12/23

Effective communication and efficient time and task management are two critical disciplines required for a successful business environment. This workshop provides business personnel with the skills and tools to deliver clear and concise written and verbal communication and enable them to identify and adjust messaging to the behavior style of their audience. Additionally, attendees are provided with tools and methods to prioritize tasks and increase productivity.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Diversity, Equity, & Inclusion Training

Customized training at your facility

DEI training aims to create a more harmonious workplace by increasing employee's knowledge and awareness of cultural, religious, or racial differences while delivering information about how a person can change their behavior to be more inclusive. Attendees will explore and challenge their own beliefs and unconscious biases about diversity, and acknowledge discrimination so they can apply the DEI commitment to daily practices and policies in the workplace. This training is customized for your company.

For more information contact Auria Bradley, *Associate Vice President, Workforce and Continuing Education* at *abradley@racc.edu* or call *610.372.4721 Ext. 5120*

Wellness in the Workplace

Customized training at your facility

FREE SESSION! 9/19/23
FROM 8:30AM - 11:30AM
registration required

The past few years have been tough on just about every industry. During the pandemic, people either became more aware of their physical and mental health, or lost sight of it. We are proud to announce that we have developed a program of wellness that we feel encompasses a body and mind approach to help create a sense of belonging within your organization. We believe this is paramount towards any company's success.
Increased energy and positivity are the goals, and they will aid your company in conquering the number one cause of low employee retention and that is stress. Show your team that you will invest in them, and they will in turn invest in you.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Consultative Selling

Time: 7 Hours
Price: $595
Date: 9/14/23

Consultative Selling is a complex process that entails a lengthy Sales cycle, multiple decision makers and a level of risk for the buyer. This workshop provides Sales personnel in a consultative role with practices, skills, tools and a framework to effectively engage customers throughout the complex Sales process and develop mutually beneficial solutions.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Delivering Superior Customer Service

Time: 7 Hours
Price: $595
Date: 10/12/23

Highly functioning Customer Service teams are viewed by their customers as partners, not simply suppliers. The ability to effectively represent your company to the customer and the customer to your company is a competitive differentiator that requires skilled and aligned customer service team members. This workshop provides all customer facing personnel with skills, best practices and tools to enable them to deliver service excellence by managing customer expectations and building customer relationships.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Train the Trainer

Time: 7 Hours
Price: $595
Date: 12/12/23

Being a subject matter expert does not necessarily imply the capability to train others. The ability to effectively "train others to train" is a force multiplier for any business and requires the knowledge and skills to both develop and deliver effective and meaningful instruction. This workshop provides subject matter experts with the tools, skills and best practices to develop other trainers in an adult learning environment and expand their organization's training capacity.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

One on One Performance Coaching

Customized training at your facility

Performance coaching can help identify an employee's growth, as well as help plan and develop new skills. Our Certified Coaches meet one on one with employees for

- Behavior Change Wellness & Stress Management
- Leadership Development
- Succession planning
- Performance Improvement Plans (PIPs)
- Culture Development and much more

For more information contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

SUPERVISOR TRAINING:
THE ENERGETIC AND INFLUENTIAL LEADER

Time: 20 Hours (five, 4-hour sessions)
Price: $1,295
Start date: Wednesdays starting on 10/18/23

This workshop follows a process that develops an effective style of leadership that positively influences and changes those you work and interact with, yourself, and your entire organization. The workshop starts with the Energy Leadership Index (ELI) assessment that will allow you to understand the concepts of energy, and how they are relate to a Transformative Leadership Development System Based on **Seven Levels of Leadership** and eight Building Blocks that enable powerful changes in you. In addition to the **Energy Leadership Index,** you will take a **DISC assessment** to understand both your personality style and how to better manage those of differing personality styles.

To register go to: *sttc.eventbrite.com* | For a customized training at your facility contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

Supporting the Training Needs of Pennsylvania's Companies for More Than 20 Years! Formed in 1999 and funded by the Pennsylvania Department of Community and Economic Development, WEDnetPA is the primary delivery system for the Commonwealth's incumbent worker training program. Each year, WEDnetPA serves more than 700 companies and tens-of-thousands of employees, strengthening these businesses and improving Pennsylvania's economy.

Contact Pandora Mazzo
to discuss detailed company guidelines and to start the application process for funding.
610.372.4721 x5312 or WEDnet@racc.edu

Company Eligibility

- Must be located in Pennsylvania.
- Must be in an eligible industry cluster, commercial/ industrial in nature and not limited or explicitly defined as ineligible in full guidelines.
- Maximum grant amount is $2,000 per employee, up to $100,000 per company per fiscal year.
- Company can only receive funding two years in a row or three out of a five year period.

Employee Eligibility

- Must be a resident of and employed in Pennsylvania.
- Must earn at least $12.00 per hour, excluding benefits.
- Must be permanently employed full-time and eligible for full-time benefits.
- Must be an employee of the specific company location for which a grant is awarded.

Eligible Training

- Must be skill building for current job or advancement.*
- All of RACC's Options include third-party providers, WEDnetPA partners and qualified in-house staff.
- Must start on or after July 1, 2023 and be completed on or before June 30, 2024. Partial training cannot be reimbursed.
- Cost must be "reasonable" as defined in complete guidelines.
- Each course must be a minimum of 30 minutes in length.

** Courses in this catalog are eligible for WEDnet reimbursement.*

Lean Six Sigma Boot Camp

White Belt, 32 Hours - $1995
Yellow Belt, 40 Hours - $3225
Green Belt, 80 Hours - $4345
Black Belt, 120 Hours - $5995
Customized training at ***your facility***

** Contact Pandora Mazzo for Breakout Session Pricing.

Our Lean Six Sigma Boot Camp solves real problems in real time at ***your facility***. Up to 120 hours of experienced, in-person and interactive training. Change and continuous improvement is a process. It begins with having the necessary skills, tools and techniques to lead a team through a project and to actively and professionally participate in continuous improvement. The Lean Six Belt classes will provide the tools, skills and techniques needed to assist you in becoming a leader in facilitating Lean and continuous improvement. Select a Belt Boot Camp Belt Certification or have a breakout session by select any of our fifteen sessions.

Solve real problems in real time at YOUR FACILITY.

"I was able to start to think about business concepts from a different perspective and really try to address the "why" and get to the root cause of an issue and not just fix the problem in front of me..."
Rachel Luckhart
Senior LIMS Administrator
Suburban Testing Labs

For more information contact Pandora Mazzo at
pmazzo@racc.edu or call 610.372.4721 Ext. 5312

"The continuous improvement culture techniques we were so expertly taught will enable us to add to the already realized benefits and continue to add to them well into the future..."
Kevin Gallen
Vice President Operations
Ethosource LLC

Belts **Workshops**

- Introduction to Lean Principles, Strategies & Techniques (8 Wastes)
- Kaizen Events (Plan, Conduct & Follow-up)
- 6S Workplace Organization Kaizen
- Lean Daily Management (SQDC)
- Root Cause & Corrective Action (8D)
- Six Sigma - DMAIC (Define–Measure–Analyze–Improve–Control)
- Kanban Pull Systems (PFEP)
- Continuous Flow (Cellular Layouts)
- Quick Changeover (SMED)
- Total Preventive Maintenance (TPM)
- Lean Leader / Facilitator / Coach (LFC)
- The Eight Steps of Value Stream Management (VSM)
- Six Sigma – Statistical Process Control (SPC)
- Creating a Continuous Improvement Culture (Kata)
- Policy Deployment / Hoshin

*** Contact Pandora Mazzo for Breakout Session Pricing.*

For more information contact Pandora Mazzo at
pmazzo@racc.edu or call 610.372.4721 Ext. 5312

Developed by PMI and validated by PMP's, RACC's Workforce Development Group is now a Project Management institute Premier Authorized Training Partner.

PMI sets the Global standard for Project Management.

This course is using the materials developed by PMI and satisfies the 35 training hours required to apply for PMP certification. This fun and interactive course contains five modules that immerse you in real-world scenarios, representing various industries and project management situations to help you practice applying principles and concepts at work.

Who Should Take This Course:

- PMP candidates
- Mid-level Project Managers
- Those who want or need training requirements to become PMP certified
- Those who want to build-up their knowledge in agile and hybrid approach

Module 1- Creating a High Performing Team

Module 2 - Start the Project

Module 3 - Plan the Project

Module 4 - Lead the Project Team

Module 5 - Support the Project: Team Performance

Module 6 - Close the Project

If you are looking to only earn Professional Development Units (PDUs), this course will help you refresh your project management knowledge and includes new content on agile and hybrid approaches.

OSHA COMPLIANT SAFETY TRAINING TAUGHT AT YOUR FACILITY

- **OSHA 10 + 30 HOUR - GENERAL INDUSTRY**
- **LOCKOUT/TAGOUT**
- **MACHINE GUARDING**
- **FALL PROTECTION**
- **CONFINED SPACE**
- **FIRE EXTINGUISHERS**
- **INCIPIENT FIRE BRIGADE**

Customized training at your facility!

For more information contact Pandora Mazzo at *pmazzo@racc.edu or call 610.372.4721 Ext. 5312*

CPR Training for your Workforce

CPR custom training options include:

- **Training at organization sites day or evening**
- **Training on RACC Campus for organizations and individuals**

AUTHORIZED TRAINING CENTER

New to the RACC's American Heart Association Training Center-**Basic Life Support Classes in Spanish.**

Our Workforce Team delivers custom training solutions that meet your needs. Contact Auria Bradley at *abradley@racc.edu* or call *610.372.4721 Ext 5120*

CompTIA

AVAILABLE IN SPANISH

A+ SERIES: IT ESSENTIALS

IT Essentials: PC Hardware and Software covers the fundamentals of PC computer technology, networking, and security, and also provides an introduction to advanced concepts. IT Essentials: PC Hardware and Software is a hands-on, e-learning solution with an emphasis on practical experience to help students develop fundamental computer skills along with essential career skills. This curriculum also helps students prepare for the CompTIA A+ certification.

Aligns with 220-1001 & 220-1002 CompTIA A+ Certification exams

IT ESSENTIALS - FUNDAMENTALS
ZCOM-336 **$1,815**
Textbook additional fee.
Includes test fee.
Approximate time to complete: 200 hours
Instructor support during lab hours.

IT ESSENTIALS - ADVANCED
ZCOM-337 **$1,815**
Includes test fee.
Prerequisite of ZCOM 336
(use book from ZCOM 336)
Approximate time to complete: 200 hours
Instructor support during lab hours.

SECURITY+
ZCOM-355 **$3,075**
Includes test fee.
Approximate time to complete: 200 hours
Instructor support during lab hours.

CCNA 7.0

Textbook additional fee.
Instructor support during lab hours.

CCNA 7.0 teaches comprehensive networking concepts and skills, from network applications to the protocals and services provided to these applications. Learners will progress from basic networking to more complex enterprise and theoretical networking models later in the curriculum. There are three course that make up the CCNA 7.0 curriculum - they are aligned to cover the competencies outlined for the CCNA Certification Exam (200-301).

ENTERPRISE NETWORKING, SECURITY, AND AUTOMATION
ZCOM-416 **$1205 for Approx. 90 hours**
Instructor support during lab hours. **(includes exam)**

INTRO TO NETWORKS
ZCOM-413 **$875 for Approx. 90 hours**

SWITCHING, ROUTING AND WIRELESS ESSENTIALS
ZCOM-414 **$875 for Approx. 90 hours**
Instructor support during lab hours.

IIOT
ZCOM-419 **$1,405 for Approx. 90 hours**
Instructor support during lab hours.
After completion of this course students can sit for the 200-601 IMINS2
Prerequisites: Industrial Networking Specialist or CCENT or CCNA Routing and Switching, or any valid CCIE certification.

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Precision Machining Level 1

National Institute for Metalworking Skills

ENTRY LEVEL CNC MACHINE OPERATOR

BASIC CNC OPERATION
(Z)MTT-100 **$3,625**
Skills needed for the operation of the CNC mill, CNC lathe and CNC grinder. Preparation for NIMS Level I certificate: CNC Mill Operation. Includes OSHA 10-hour General Industry Training Program. **150 hours**

BASIC CNC LATHE OPERATION
(Z)MTT-101 **$645**
Teaches basic set up and operation of CNC lathes. Preparation NIMS Level I certificate: CNC Lathe Operation.
Co-requisite: (Z)MTT-100 **30 hours**

INTRODUCTION TO MACHINING
(Z)MTT-105 **$1,920 (textbook additional)**
Theoretical and practical aspects of shop safety, hand tools, precision layout, precision measuring instruments, taps, dies, files, reamers, and identification and use of appropriate materials to manufacture parts are covered. Preparation for two NIMS Level I certifications: Measurement, Materials and Safety; Layout and Bench work. **75 hours**

BASIC MACHINE TOOLS
(Z)MTT-110 **$1,920 (textbook additional)**
Basic operations of the drill press, pedestal grinder and band saw will be covered. Preparation for the NIMS Level I certification: Drill Press. **75 hours**

Precision Machining Level 2

TURNING TECHNOLOGY LEVEL I
(Z)MTT-157 **$1,920 (textbook additional)**
Knowledge, practical learning experience and accident prevention awareness required to perform conventional lathe job planning, set-up and operation. Aspects of conventional, carbide and other tooling materials selection, preparation, and usage will be covered. Preparation to take NIMS Level I certification: Turning between Centers and Chucking. **75 hours**

MILLING TECHNOLOGY LEVEL I
(Z)MTT-158 **$1,920 (textbook additional)**
Knowledge and skills necessary to identify and safely use various milling cutters and other tools that are adapted to milling machines. This course covers conventional milling machine parts and controls, the function of each part and control and techniques so that students can operate the machines safely and with a high degree of accuracy. Preparation to take the NIMS Level I certification: **75 hours**

BLUEPRINT READING
(Z)MTT-132 **$1,865 (textbook additional)**
Teaches necessary skills to interpret part drawings. Emphasis will be placed on stimulating the students' creativity and the ability to visualize the drawn object. This course will start with simple part drawings and advance to more complex part drawings. **75 hours**

CNC PROGRAMMING
(Z)MTT-180 **$1,865 (textbook additional)**
Introduction to "G"and "M" code programming for Milling and Turning. Teaches theory designed to successfully start programming CNC Mills and Turning Centers. This program is recommended for the student who wants to further their knowledge in CNC Programming. **75 hours**

Flexible start times available

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Precision Machining Level 3

MILLING TECHNOLOGY LEVEL II (Z)MTT-212
Time: 75 hours
Cost: $1,920 (textbook additional)

Knowledge and skills necessary to identify and safely use various milling cutters and other tools that are adaptable to milling machines. Students learn to set up work pieces to be properly machined. Preparation for NIMS Level II certification: Milling.

TURNING TECHNOLOGY LEVEL II (Z)MTT-225
Time: 75 hours
Cost: $1,920 (textbook additional)

Knowledge, practical learning experience and accident prevention awareness required to perform advanced conventional lathe job planning, set-up and operation. Aspects of conventional, carbide and other tooling materials selection, preparation, and usage will be covered. Preparation for NIMS Level II certification: Turning between Centers and Chucking.

CNC MILL LEVEL I (Z)MTT-185
Time: 75 hours
Cost: $2,030 (textbook additional)

Teaches FANUC "G" and "M" code programming along with set-up and operation of CNC MIlling Centers. Designed by FANUC to teach CNC Programming, Set-up and Operation for Machining Centers. Preparation for NIMS CNC Milling Level 1 Programming and Operation exam.

ENGINEERING GRAPHICS WITH SOLIDWORKS
Time: 45 hours
(Z)MTT-107 $1,315 (No Textbook Required)

Learn to use SOLIDWORKS to draw 3d part models, 2d part drawings, parametric parts, part assemblies and basic simulation. Exercises include sketching, extruding parts, editing parts, moving assemblies and SimulationXpress. Students will learn the foundational skills of SOLIDWORKS.

Flexible start times available

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Precision Machining Level 4

CNC MILLING II
(Z)MTT-272 $2,030(textbook additional)

Designed by FANUC to teach FANUC MACRO Programming. Preparation for NIMS CNC Milling Level II Programming and Operation exam.
75 hours

CAM PROGRAMMING
(Z)MTT-288 $1,865 (textbook additional)

Teaches skills of Computer Aided Manufacturing (CAM) programming using MasterCAM software. Students will learn how to create 2D mill, 3D mill and lathe part geometries and toolpaths. Students will also use the software to create CNC part programs and be able to verify their toolpaths. **75 hours**

Plus General Education Requirements*

***Gen Ed Courses AAS Degree**	**25 cr.**
CSS 103 College Success Strategies	3 cr.
MAT 165 Math Trigonometry	3 cr.
IFT 110 Microcomputer Applications	3 cr.
SOC 130 Sociology	3 cr.
COM 121 or 122 English Composition	3 cr.
COM 141 Technical Writing	3 cr.
PHY 240 Physics I	4 cr.
Humanities Elective	3 cr.

Precision Machining Level 4 Electives - Select One

GRINDING TECHNOLOGY
(Z)MTT-221 $1,920 (textbook additional)

Teaches theoretical and the practical skills development in precision grinding operations. Students will learn to safely use a surface grinder, applying various techniques to make metal parts to blueprint specifications. Preparation for NIMS Level I & Level II certification in grinding. **75 hours**

ADVANCED CNC TURNING
(Z)MTT-276 $2,030 (textbook additional)

Designed by FANUC to teach "G" and "M" code programming along with setup and operation of CNC Turning Centers. Preparation for NIMS CNC Turning Level 1 Programming and Operation exam. **75 hours**

FIXTURE DESIGN - CAD EXPERIENCE PREFERRED
(Z)MTT-265 $1,370 (textbook additional)

Teaches CAD software design of production ready jigs and fixtures. Design features and methods will be discussed.
45 hours

Flexible start times available

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

PICK AND CHOOSE - GET CERTIFIED IN JUST WHAT YOU NEED.

CNC Precision

(Z)MTT 100 **Basic CNC Operation**
(Z)MTT 101 **Basic CNC Lathe**
(Z)MTT 180 **CNC Programming**
(Z)MTT 185 **CNC Milling Level 1**
(Z)MTT 276 **Advanced CNC Turning**
(Z)MTT 272 **CNC Milling Level 2**
(Z)MTT 288 **CAM Programming**

Design/CAD

(Z)MTT 107 **SOLIDWORKS**
(Z)MTT 132 **Blueprint Reading**
(Z)MTT 288 **CAM Programming**
(Z)MTT 310 **Auto CAD**
ZMTT 330 **Autodesk Fusion 360**
ZMTT 320 **Autodesk Inventor**
ZMTT 341 **Solidworks CAM**
ZMTT 350 **Introduction to 3D Printing**

Manual Machining Level 1

(Z)MTT 105 **Intro to Machining**
(Z)MTT 110 **Basic Machine Tools**
(Z)MTT 157 **Turning Technology Level 1**
(Z)MTT 158 **Milling Technology Level 1**

Manual Machining Level 2

(Z)MTT 132 **Blueprint Reading**
(Z)MTT 212 **Milling Technology Level 2**
(Z)MTT 225 **Turning Technology Level 2**
(Z)MTT 221 **Grinding Technology**

For description of all courses, reference pages 21-23

MANUFACTURING PROCESS & MACHINING

COMPUTER AIDED DESIGN (CAD)

AUTOCAD – ZMTT 310
Average time for course completion: 36 hours
Investment: $910
For the new user who needs comprehensive training in AutoCAD, edit and publish drawings with AutoCAD. No previous CAD experience necessary. Drafting, design or engineering experience a plus. **Prerequisite: Working knowledge of the Windows-based operating system.**

ENGINEERING GRAPHICS WITH SOLIDWORKS
ZMTT 107
Average time for course completion: 45 hours
Investment: $1,315
Learn to use **Solidworks** to draw 3D part models, 2D part drawings, parametric parts, part assemblies and basic simulation. Exercises include sketching, extruding parts, editing parts, moving assemblies and **SimulationXpress**. Students will learn the foundation skills of **Solidworks.**

AUTODESK FUSION 360
ZMTT 330
Average time for course completion: 45 hours
Investment: $1,315
Learn to use Autodesk Fusion 360 to create 3D part models, 2D part drawings and assemblies.

Contact Judith Veccchio at 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

AUTODESK INVENTOR
ZMTT 320
Average time for course completion: 45 hours
Investment: $1,315
Learn to use Autodesk Inventor to create 3D part models, 2D part drawings and assemblies.

SOLIDWORKS CAM
ZMTT 341
Average time for course completion: 8 hours
Investment: $305
Learn how to use the included CAM function in Solidworks to create CNC milling toolpaths. You must be able to use Solidworks to complete this class.

INTRODUCTION TO 3D PRINTING
ZMTT 350
Average time for course completion: 8 hours
Investment: $325
Learn what 3D printing is and how a part gets printed.

CERTIFICATE AND DEGREE PROGRAMS
INDUSTRIAL MAINTENANCE TECHNICIAN, MECHATRONICS AAS

RACC's **Mechatronics/AMIST** technical courses are offered in two instructional delivery/learning models:

- **Traditional -** All training, both theory and hands-on, conducted at the Schmidt Training and Technology Center.
- **Hybrid -** Theory accessed over the Internet with instructor support; hands-on skills taught and assessed at the Schmidt Training and Technology Center. Access to the Internet training site is 24 hours a day, seven days a week.

In both models, instructors with relevant industry experience are available to guide students through the program.

AMIST 1 (ADVANCED MANUFACTURING INTEGRATED SYSTEMS)

MET 120 **OR***
Industrial Mechanical – Hydraulics Track
ZTEC 356
Approximately 162 hours of training, 5 college credits
Investment: $4,935
Traditional or Hybrid Learning
- Hydraulics 1
- Hydraulics 2
- Pneumatics 1
- Pneumatics Maintenance
- Pneumatics Construction
- Piping Systems
- Hydraulic Troubleshooting
- Basic Mechanical Drives
- Light & Heavy Duty V-Belt and Chain Drives

MET 120
Industrial Mechanical – Pneumatics Track
ZTEC 371
Approximately 162 hours of training, 5 college credits
Investment: $4,935
Traditional or Hybrid Learning
- Pneumatics 1
- Pneumatics 2
- Pneumatics Maintenance
- Pneumatics Troubleshooting
- Hydraulics 1
- Piping Systems
- Basic Mechanical Drives
- Light & Heavy Duty V-Belt and Chain Drives

MET 130
Industrial Electrical
ZTEC 227
Approximately 120 hours of training, 4 college credits
Investment: $3,535
Traditional or Hybrid Learning
- Electrical Control Circuits 1
- Electrical Control Circuits 2
- Electrical Motor Control 1
- Electrical Motor Control 2
- Electro-Fluid Power 1
- Electronic Sensors
- Residential/Commercial Wiring
- Industrial Electrical Wiring
- Industrial Power Distribution

MET 140-A
Industrial PLC (SLC500)
ZTEC 428
Approximately 80 hours of training, 2 college credits
Investment: $2,225
Traditional or Hybrid Learning
- Introduction to PLC
- Basic PLC Programming
- PLC Motor Control
- Discrete I/O Interfacing
- Intro to PLC Troubleshooting
- PLC Systems Troubleshooting
- Event Sequencing
- Application Development
- Timer & Counter Instructions
- Program Control Instructions
- Math and Data Move Instructions

AMIST 2 (ADVANCED MANUFACTURING INTEGRATED SYSTEMS)

MET 150 **OR***
Industrial Mechanical 2 – Hydraulics Track
ZTEC 369
Approximately 170 hours of training, 6 college credits
Investment: $4,860
- Spur Gear & Multiple Shaft Drives
- Belts, Lubrication, Shaft Alignment and Couplings
- Mechanical Drives 3 & 4
- Floor Standing Conveyors
- Vibration Analysis
- Laser Alignment
- Hydraulic Maintenance
- Pneumatic Directional Control Valves & Air Logic
- Advanced Pneumatics
- Pneumatic Troubleshooting

MET 150
Industrial Mechanical 2 - Pneumatics Track
ZTEC 375
Approximately 170 hours of training, 6 college credits
Investment: $4,860
- Spur Gear & Multiple Shaft Drives
- Synchronous Belt Drives
- Lubrication Concepts
- Precision Shaft Alignment
- Couplings
- Mechanical Drives 3 & 4
- Floor Standing Conveyors
- Vibration Analysis
- Laser Alignment
- Hydraulic Maintenance
- Hydraulics 2
- Hydraulic Troubleshooting

MET 160
Industrial Electrical 2
ZTEC 242
Approximately 115 hours of training, 3 college credits
Investment: $2,480
- Basic Electrical Machines System
- Advanced Electric Motor Controls
- DC Electronic Drives
- AC Electronic Drives
- PLC/VFD Wiring

MET 140-B
Industrial PLC (SLC500) 2
ZTEC 433
Approximately 40 hours of training 2 college credits
Investment: $1,130
- Analog Application System
- Data Highway 485 System
- Panelview Plus 6 DH-485 System w/ Keypad
- Remote Input/Output

OR* - pneumatics concentration preferred by food and pharmaceuticals manufacturing, hydraulics concentration preferred by general manufacturing

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

MECHATRONICS/AMIST

CERTIFICATE AND DEGREE PROGRAMS
INDUSTRIAL MAINTENANCE TECHNICIAN, MECHATRONICS AAS

AMIST 3 (ADVANCED MANUFACTURING INTEGRATED SYSTEMS)

MET 200
Industrial Robotics and Motion Control
ZTEC 531
Approximately 140 hours of training, 4 college credits
Investment: $4,635
- Robotics & Computer Programming
- Flexible Manufacturing Systems
- General Purpose Motion Control System
- Multi-Axis Motion Control System

MET 210
Process Control & Industrial Instrumentation
ZTEC 437
Approximately 90 hours of training, 3 college credits
Investment: $2,555

Advanced Industrial PLC - Your choice:

MET 220
Advanced Industrial PLC AB ControlLogix
ZTEC 438
Approximately 170 hours of training, 4 college credits
Investment: $4,395
- PLC Controller and Troubleshooting Functions
- Analog I/O Application System
- Panelview Plus 7
- DeviceNet I/O Networking
- ControlNet Networking
- Ethernet/IP Networking

OR

MET 220
Advanced Industrial PLC Siemens S7-300
ZTEC 439
Approximately 140 hours of Training, 4 college credits
Investment: $4,395
- Controller & Troubleshooting Functions
- Analog I/O Application System
- Profibus Communications System
- TP1200 Operator Panel (HMI)
- Remote Input/Output
- Math and Data Move Instructions

NOW IN A STUDIO 5000 ENVIRONMENT!

AMIST 4 (ADVANCED MANUFACTURING INTEGRATED SYSTEMS)

MET 111
Manufacturing Fundamentals
ZTEC 561
Approximately 30 hours of training
1 college credit - hybrid learning
Investment: $625
- Principles of Advanced Manufacturing
  Introduces typical plant processes such as CNC, PLC and Automation
  Reviews typical plant layouts for efficient manufacturing
  Manufacturing personnel and their responsibilities
- Lean Manufacturing
  Introduces principles and methods of workplace organization using 5s methods
- Communication Skills
  Importance of effective communication, listening skills, and feedback
- Safety Practices and Regulations
  Reviews basic workplace safety concepts and practices
- Personal Protection Equipment
  Reviews the importance of Personal Protective Equipment (PPE)
  Identifies the potential hazards that require PPE
  Types of PPE required for different types of hazards
  The worker's role in following PPE guidelines and requirements

MET 240
Capstone Class:
Mechatronics Application Project
ZTEC 522
Approximately 120 hours of training
3 college credits
Investment: $3,520
This course provides students the opportunity to apply skills and knowledge gained from training in the electrical, mechanical and process control program areas to an independent mechatronics project. The student, working with another student or an instructor, will develop and implement a project plan that will demonstrate the student's ability to integrate the skills and knowledge learned.

MET 101
Introduction To Shop Machinery
ZTEC 558
Average time for course completion: 90 hours
3 college credits.
Investment: $2,625
- Quality Assurance
  - Basic Measurement, Precision Measurement, Dimensional Gauging
  - Inroduction to SPC,SPC Problem Solving
  - Control Chart Operation, Control Chart Analysis
  - Geometric Dimensioning and Tolerancing
  - Location, Form and Orientation Tolerances
- Blueprint Reading
- Solid Drawing Modeling
  - Solid Model creation using Solidworks
  - Assembly creation using Solidworks
- Manual Machine Tools
  - Introduction to the Drill Press, Drill Press Operations
  - Introduction to the Milling Machine, Milling Operations
  - Introduction to the Manual Lathe, Lathe Operations
- OSHA 10-Hour General Industry Safety Course

MET Courses Plus General Education Requirements*

*Gen Ed Courses AAS Degree	31 cr.
CSS 103 College Success Strategies	3 cr.
MAT 160 College Algebra	3 cr.
COM 121 or 122 English Composition	3 cr.
PHY 240 Physics I	4 cr.
IFT 110 Microcomputer Applications	3 cr.
SOC 130 Sociology	3 cr.
Select one	4cr.
BIO 150, Biology I	
CHEM 150, Chemistry I	
PHY 245, Physics II	
COM 141 Technical Writing	3 cr.
HUM 100 Critical Thinking	3 cr.

Hand Tools, Safety, Quality

MECHANICAL FABRICATION BASIC SKILLS – ZTEC 390
Average time for course completion: 32 hours
Investment: $675

LAP 1 Threaded Fasteners
LAP 2 Wrenches
LAP 3 Pneumatic System Fabrication
LAP 4 Screwdrivers
LAP 5 Pliers and Locking Devices
LAP 6 Mallets and Non-Threaded Fasteners
LAP 7 Torque Wrenches
LAP 8 Portable Power Tools

BLUEPRINT READING 1 – ZTEC 516
Average time for course completion: 12 hours
Investment: $305

LAP 1 Multiview Drawings
LAP 2 Sectional Drawings and Fasteners
LAP 3 Geometric Dimensioning and Tolerancing

MANUFACTURING PROCESSES – ZTEC 548
Average time for course completion: 36 hours
Investment: $1,140
Prerequisite: ability to read blueprints

LAP 1 Band Saw Operation
LAP 2 Intro to the Drill Press
LAP 3 Drill Press Operations
LAP 4 Intro to Manufacturing Hand Tools
LAP 5 Intro to the Manual Milling Machine
LAP 6 Milling Processes
LAP 7 Intro to the Manual Lathe
LAP 8 Turning Operations
LAP 9 Lathe Operations

QUALITY ASSURANCE – ZTEC 500
Average time for course completion: 44 hours
Investment: $1,320
Prerequisite: ability to read blueprints

LAP 1 Basic Measurement
LAP 2 Precision Measurement Tools
LAP 3 Dimensional Gauging
LAP 4 Introduction to Statistical Process Control (SPC)
LAP 5 Control Chart Operation
LAP 6 Control Chart Analysis
LAP 7 SPC Problem Solving
LAP 8 Geometric Dimensioning and Tolerancing
LAP 9 Location Tolerances
LAP 10 Orientation Tolerances
LAP 11 Form Tolerances

INTRODUCTION TO SHOP MACHINERY – ZTEC 558
Average time for course completion: 90 hours 3 college credits.
Investment: $2,625

- Quality Assurance
  - Basic Measurement, Precision Measurement, Dimensional Gauging
  - Inroduction to SPC,SPC Problem Solving
  - Control Chart Operation, Control Chart Analysis
  - Geometric Dimensioning and Tolerancing
  - Location, Form and Orientation Tolerances
- Blueprint Reading
- Solid Drawing Modeling
  - Solid Model creation using Solidworks
  - Assembly creation using Solidworks
- Manual Machine Tools
  - Introduction to the Drill Press, Drill Press Operations
  - Introduction to the Milling Machine, Milling Operations
  - Introduction to the Manual Lathe, Lathe Operations
- OSHA 10-Hour General Industry Safety Course

MECHANICAL AND ELECTRICAL FABRICATION – MET 090/ZTEC 560
Average time for course completion: 45 hours
Investment: $899

LAP 1 Threaded Fasteners
LAP 2 Wrenches
LAP 3 Pneumatic System Fabrication
LAP 4 Screwdrivers
LAP 5 Pliers and Locking Devices
LAP 6 Mallets and Non-Threaded Fasteners
LAP 7 Torque Wrenches
LAP 8 Portable Power Tools
LAP 9 Electrical Systems
LAP 10 Residential Wiring System Components
LAP 11 Service Connections & Circuit Protection

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Hydraulics

BASIC HYDRAULICS – ZTEC 300
Average time for course completion: 20 hours
Investment: $585

LAP 1 Hydraulic Power Systems
LAP 2 Basic Hydraulic Circuits
LAP 3 Principles of Hydraulic Pressure and Flow
LAP 4 Hydraulic Speed Control
LAP 5 Pressure Control Circuits

INTERMEDIATE HYDRAULICS – ZTEC 301
Average time for course completion: 25 hours
Investment: $670

LAP 1 Hydraulic DCV Applications
LAP 2 Hydraulic Cylinder Applications
LAP 3 Hydraulic Relief Valve Operation
LAP 4 Hydraulic Check Valve Applications
LAP 5 Accumulator Applications

ADVANCED HYDRAULICS – ZTEC 302
Average time for course completion: 15 hours
Investment: $399

LAP 1 Hydraulic Motor Applications
LAP 2 Hydraulic Pump and Motor Performance
LAP 3 Fluids and Conditioning

HYDRAULIC TROUBLESHOOTING – ZTEC 308
Average time for course completion: 45 hours
Investment: $1,230

LAP 1 Introduction to Pressure-Compensated Pumps
LAP 2 Pressure-Compensated Pump Performance
LAP 3 Troubleshooting Hydraulic Pumps
LAP 4 Troubleshooting Hydraulic Actuators
LAP 5 Troubleshooting Hydraulic DCVs
LAP 6 Troubleshooting Flow Control and Check Valves
LAP 7 Troubleshooting Pressure Control Valves
LAP 8 Troubleshooting Unloader and Counter balance Valves
LAP 9 Troubleshooting Hydraulic Systems

HYDRAULIC MAINTENANCE - ZTEC 3017
Average time for course completion: 20 hours
Investment: $670

LAP 1 Hydraulic Filter Maintenance
LAP 2 Hydraulic Fluid Maintenance
LAP 3 Fittings and Seals
LAP 4 Hose and Clamping Devices
LAP 5 Tubing and Component Installation

Rigging

RIGGING SYSTEMS 1 – ZTEC 357
Average time for course completion: 35 hours Investment: $890

LAP 1 Introduction to Rigging
LAP 2 Hoists
LAP 3 Slings and Lifting
LAP 4 Wire Rope
LAP 5 Chain Slings
LAP 6 Fiber Rope
LAP 7 Industrial Cranes

RIGGING SYSTEMS 2 – ZTEC 358
Average time for course completion: 15 hours
Investment: $395

LAP 1 Wire Mesh Slings
LAP 2 Synthetic Slings
LAP 3 Equipment Movement

Pneumatics

BASIC PNEUMATICS – ZTEC 305
Average time for course completion: 16 hours
Investment: $450

LAP 1 Pneumatic Power Systems
LAP 2 Basic Pneumatic Circuits
LAP 3 Principles of Pneumatic Pressure and Flow
LAP 4 Pneumatic Speed Control Circuits

INTERMEDIATE PNEUMATICS – ZTEC 306
Average time for course completion: 15 hours
Investment: $395

LAP 1 Pneumatic DCV Applications
LAP 2 Air Logic
LAP 3 Pneumatic Maintenance

ADVANCED PNEUMATICS – ZTEC 307
Average time for course completion:15 hours Investment: $395

LAP 1 Moving Loads Pneumatically
LAP 2 Vacuum Systems
LAP 3 Air Compressors

PNEUMATIC TROUBLESHOOTING – ZTEC 309
Average time for course completion: 35 hours
Investment: $960

LAP 1 Pneumatic Troubleshooting
LAP 2 Air Preparation Troubleshooting
LAP 3 Troubleshooting Pneumatic Cylinders
LAP 4 Motor & Rotary Actuator Troubleshooting
LAP 5 Troubleshooting DCV & Flow Control Valves
LAP 6 Troubleshooting Vacuum Systems
LAP 7 Troubleshooting Pneumatic Systems

PNEUMATIC SYSTEM CONSTRUCTION – ZTEC 324
Average time for course completion: 4 hours
Investment: $175

Lubrication

CENTRAL LUBRICATION – ZTEC 318
Average time for course completion: 20 hours
Investment: $545

LAP 1 Introduction to Central Lubrication
LAP 2 Lubrication Concepts
LAP 3 Simple Series/Progressive Lubrication System
LAP 4 Troubleshooting Series/Progressive Lubrication Systems
LAP 5 Piston Distributor Lubrication Systems

Mechanical Drives

Pumps, Piping

MECHANICAL DRIVES 1 – ZTEC 311 is a prerequisite for ALL Mechanical Drives and Pumps courses on this page.

MECHANICAL DRIVES 1 – ZTEC 311
Average time for course completion: 35 hours
Investment: $985
LAP 1 Intro to Mechanical Drive Systems
LAP 2 Key Fasteners
LAP 3 Power Transmission Systems
LAP 4 Intro to V-Belt Drives
LAP 5 Intro to Chain Drives
LAP 6 Spur Gear Drives
LAP 7 Multiple Shaft Drives

MECHANICAL DRIVES 2 – ZTEC 312
Average time for course completion: 35 hours
Investment: $985
LAP 1 Heavy-Duty V-Belt Drives
LAP 2 V-Belt Selection and Maintenance
LAP 3 Synchronous Belt Drives
LAP 4 Lubrication Concepts
LAP 5 Precision Shaft Alignment
LAP 6 Couplings
LAP 7 Heavy-Duty Chain Drives

MECHANICAL DRIVES 3 – ZTEC 313
Average time for course completion: 35 hours
Investment: $985
LAP 1 Plain Bearings
LAP 2 Ball Bearings
LAP 3 Roller Bearings
LAP 4 Antifriction Bearing Selection and Maintenance
LAP 5 Gaskets and Seals
LAP 6 Advanced Gear Drives
LAP 7 Gear Drive Selection and Maintenance

MECHANICAL DRIVES 4 – ZTEC 314
Average time for course completion: 20 hours
Investment: $550
LAP 1 Brakes and Clutches
LAP 2 Brake/Clutch Selection and Maintenance
LAP 3 Linear Ball Bushings
LAP 4 Ball Screw Drives

FLOOR STANDING CONVEYORS – ZTEC 315
Average time for course completion: 4 hours
Investment: $175

VIBRATION ANALYSIS – ZTEC 316
Average time for course completion: 12 hours
Investment: $385
LAP 1 Intro to vibration analysis
LAP 2 Vibration condition monitoring
LAP 3 Vibration analysis

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

LASER ALIGNMENT – ZTEC 317
Average time for course completion: 8 hours
Investment: $265
LAP 1 Intro to laser shaft alignment
LAP 2 Laser shaft alignment operation

CENTRIFUGAL PUMP SYSTEMS – ZTEC 319
Average time for course completion: 20 hours
Investment: $580
LAP 1 Centrifugal Pump Operation
LAP 2 Centrifugal Pump Characteristics
LAP 3 Centrifugal Pump Troubleshooting
LAP 4 System Characteristics
LAP 5 Centrifugal Pump Performance

DIAPHRAGM PUMP – ZTEC 320
Average time for course completion: 4 hours
Investment: $175

PERISTALTIC PUMP – ZTEC 321
Average time for course completion: 4 hours
Investment: $175

MAGNETIC PUMP – ZTEC 322
Average time for course completion: 4 hours
Investment: $175

CENTRIFUGAL PUMP /STUFFING BOX – ZTEC 323
Average time for course completion: 4 hours
Investment: $175

MULTIPLE PUMP LEARNING SYSTEM – ZTEC 352
Average time for course completion: 4 hours
Investment: $175

GEAR PUMP – ZTEC 353
Average time for course completion: 4 hours
Investment: $175

PISTON PUMP – ZTEC 354
Average time for course completion: 4 hours
Investment: $175

TURBINE PUMP – ZTEC 372
Average time for course completion: 4 hours
Investment: $175

PIPING SYSTEMS – ZTEC 310
Average time for course completion: 35 hours
Investment: $1,020
LAP 1 Metal Piping Systems
LAP 2 Metal Piping Installation
LAP 3 Plastic Piping Systems
LAP 4 Metal Tubing Systems
LAP 5 Hoses
LAP 6 Two-Way Valves
LAP 7 Check Valves and Sloan Valves

Electrical Systems, Controls, Rotating Equipment

AC/DC ELECTRICAL SYSTEM – ZTEC 205
NEW TO ELECTRICAL? START HERE.
Average time for course completion: 30 hours
Investment: $825
LAP 1 Basic Electrical Circuits
LAP 2 Electrical Measurements
LAP 3 Circuit Analysis
LAP 4 Inductance and Capacitance
LAP 5 Combination Circuits
LAP 6 Transformers

ELECTRIC MOTOR CONTROL – ZTEC 207
Average time for course completion: 50 hours
Investment: $1,370
LAP 1 Introduction to Electric Motor Control
LAP 2 Manual Motor Control and Overload Protection
LAP 3 Control Transformers Control
LAP 4 Ladder Logic
LAP 5 Control Relays and Motor Starters
LAP 6 Introduction to Troubleshooting
LAP 7 System Troubleshooting
LAP 8 Reversing Motor Control
LAP 9 Automatic Input Devices
LAP 10 Basic Timer Control: On-Delay and Off-Delay

ELECTRICAL RELAY CONTROL SYSTEMS – ZTEC 231
Average time for course completion: 15 hours
Investment: $395
LAP 1 Control Logic
LAP 2 Sequencing Control
LAP 3 Timers and Advanced Systems

ADVANCED ELECTRIC MOTOR CONTROLS – ZTEC 208
Average time for course completion: 50 hours
Investment: $1,370
LAP 11 Motor Braking System
LAP 12 Reduced Voltage Starting Circuits
LAP 13 Power Generation and Distribution
LAP 14 Electronic Sensors
LAP 15 Timers and Counters
LAP 16 Variable Frequency AC Drive
LAP 17 Variable Frequency AC Drive, Speed & Torque Control
LAP 18 Variable Frequency Drives Acceleration, Deceleration, & Braking
LAP 19 Variable Frequency Drives Fault Diagnostics and troubleshooting
LAP 20 SCR Speed Motor Control

ELECTRICAL CONTROL SYSTEM WIRING – ZTEC 209
Average time for course completion: 10 hours
Investment: $325 (Allen Bradley or Siemens)
LAP 1 Introduction to Electrical Control Wiring
LAP 2 Electrical Control System Wiring
LAP 3 Pneumatic Control Circuit Wiring

PLC AND VFD ELECTRICAL CONTROL WIRING - ZTEC- 267
Average time for course completion: 5 hours
Investment: $175
Prerequisite Ztec 209 Electrical Control System Wiring

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Controls, Rotating Equipment, Drives

BASIC ELECTRICAL ROTATING MACHINES – ZTEC 206
Average time for course completion: 32 hours
Investment: $910
LAP 1 DC Series Motors
LAP 2 DC Shunt and Compound Motors
LAP 3 Motor Speed and Torque
LAP 4 Motor Performance
LAP 5 Split-Phase AC Motors
LAP 6 Capacitor-Start AC Motors
LAP 7 Permanent-Capacitor and Two-Capacitor Motors
LAP 8 Three-Phase AC Induction Motors

ROTATING ELECTRICAL MACHINES DC GENERATORS – ZTEC 250
Average time for course completion: 8 hours
Investment: $265
LAP 9 DC Generators
LAP 10 Wound-Rotor Motors

ROTATING ELECTRICAL MACHINES – ALTERNATORS/SYNCHRONOUS MOTORS – ZTEC 251
Average time for course completion: 12 hours
Investment: $385
LAP 11 Alternators
LAP 12 Alternator Synchronization Methods
LAP 13 Synchronous Motors

ELECTRICAL POWER DISTRIBUTION – ZTEC 210
Average time for course completion: 25 hours
Investment: $699
LAP 1 Introduction to Raceways
LAP 2 Basic Conduit Bending
LAP 3 Advanced Raceways
LAP 4 Conductors, Disconnects and Overcurrent Protection
LAP 5 Conduit Sizing and Wire Pulling Techniques

CONTROL PANEL WIRING – ZTEC 260
Average time for course completion: 15 hours
Investment: $395 (includes Allen Bradley and Siemens)
LAP 1 Introduction to Electrical Control Wiring
LAP 2 Electrical Control System Wiring

ELECTRICAL FABRICATION
Average time for course completion: 12 hours
Investment: $245
LAP 1 Introduction to Electrical System
LAP 2 Residential Wiring System Components
LAP 3 Service Connections and Circuit Protection

ELECTRO-FLUID POWER SYSTEM – ZTEC 303
Average time for course completion: 40 hours
Investment: $1,055
LAP 1 Introduction to Electrical Control Systems
LAP 2 Basic Control Devices
LAP 3 Power Devices
LAP 4 Control Relays
LPA 5 Sequencing Control
LAP 6 Timer Control
LAP 7 Pressure Control Applications
LAP 8 Circuit Applications

ELECTRONIC SENSORS – ZTEC 304
Average time for course completion: 8 hours
Investment: $265
LAP 1 Introduction to Electronic Sensors
LAP 2 Electronic Sensor Applications

POWER & CONTROL ELECTRONICS – ZTEC 252
Average time for course completion: 50 hours
Investment: $1,340
LAP 1 Oscilloscopes
LAP 2 Linear Power Supplies
LAP 3 Power Supply Filtration and Regulation
LPA 4 Solid State Relays
LAP 5 Discrete Sensing Devices
LAP 6 Thermal Sensing Devices
LAP 7 Amplifiers and Operational Amplifiers
LAP 8 Analog Sensing Devices
LAP 9 Solid State Switching
LAP 10 Solid State Speed and Power Control

AC ELECTRONIC DRIVES – ZTEC 400
Average time for course completion: 35 hours
Investment: $985
LAP 1 Introduction to AC Drives
LAP 2 Configuring A-B PowerFlex 70 Drives
LAP 3 A-B PowerFlex 70 Control Parameters
LAP 4 Communications and Diagnostics for A-B PowerFlex 70 Drives
LAP 5 Troubleshooting A-B PowerFlex 70 Drives
LAP 6 Configuring and Troubleshooting the A-B PowerFlex 40 Drive
LAP 7 Configuring and Troubleshooting Servo Drives

DC ELECTRONIC DRIVES – ZTEC 401
Average time for course completion: 30 hours
Investment: $830
LAP 1 Introduction to DC Motion Control
LAP 2 Basic DC Drives - SCR Control
LAP 3 DC Spindle Drives
LAP 4 DC Axis Drives
LAP 5 DC Pulse Width Modulation Drives
LAP 6 DC Drive Troubleshooting

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Allen - Bradley

AC/DC ELECTRICAL SYSTEMS ZTEC 205 AND ELECTRIC MOTOR CONTROL ZTEC 207 ARE PREREQUISITE COURSES FOR PLC TRAINING.

NOW IN A STUDIO 5000 ENVIRONMENT

Allen-Bradley

PLC ALLEN-BRADLEY SLC500 W/ TROUBLESHOOTING – ZTEC 402
Average time for course completion: 80 hours
Investment: $2,230
LAP 1 Introduction to Programmable Controllers
LAP 2 Basic PLC Programming
LAP 3 PLC Motor Control
LAP 4 Discrete I/O Interfacing
LAP 5 Introduction to PLC Troubleshooting
LAP 6 PLC Systems Troubleshooting
LAP 7 Event Sequencing
LAP 8 Application Development
LAP 9 PLC Timer Instructions
LAP 10 PLC Counter Instructions
LAP 11 Program Control Instructions
LAP 12 Math and Data Move Instructions

PLC ALLEN- BRADLEY SLC500 ANALOG APPLICATION SYSTEM – ZTEC 403
Average time for course completion: 15 hours
Investment: $420
LAP 13 Analog Input Modules
LAP 14 Analog Output Modules
LAP 15 Analog Scaling

PLC ALLEN-BRADLEY SLC500 DATA HIGHWAY 485 SYSTEM – ZTEC 404
Average time for course completion: 10 hours
Investment: $265
LAP 16 Introduction to DH-485
LAP 20 Remote I/O

PLC ALLEN-BRADLEY SLC500 PANELVIEW PLUS 1000DH-485 SYSTEM W/ KEY PAD – ZTEC 405
Average time for course completion: 15 hours
Investment: $420
LAP 17 Introduction to Panelview
LAP 18 Panelview Application Editing 1
LAP 19 Panelview Application Editing 2

PLC ALLEN-BRADLEY CONTROLLOGIX LEARNING SYSTEM WITH TROUBLESHOOTING – ZTEC 406
Average time for course completion: 80 hours
Investment: $2,230
LAP 1 Introduction to Programmable Controls
LAP 2 Basic PLC Programming
LAP 3 PLC Motor Control
LAP 4 Discrete I/O Interfacing
LAP 5 PLC Timer Instructions
LAP 6 PLC Counter Instructions
LAP 7 Introduction to PLC Troubleshooting
LAP 8 PLC Systems Troubleshooting
LAP 9 Event Sequencing
LAP 10 Application Development
LAP 11 Program Control Instructions
LAP 12 Math and Data Move Instructions

PLC ALLEN-BRADLEY CONTROLLOGIX ANALOG INPUT/OUTPUT – ZTEC 407
Average time for course completion: 20 hours
Investment: $580
LAP 13 Analog Input Modules
LAP 14 Analog Input Configuration and Troubleshooting
LAP 15 Analog Output Modules
LAP 16 Analog Output Configuration and Troubleshooting

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Allen - Bradley (cont.)

PLC ALLEN- BRADLEY PANELVIEW PLUS 7 LEARNING SYSTEM – ZTEC 408
Average time for course completion: 15 hours
Investment: $420
LAP 1 Introduction to PanelView Plus 7
LAP 2 PanelView Plus Application Editing 1
LAP 3 PanelView Plus Application Editing 2

PLC ALLEN-BRADLEY CONTROLLOGIX ETHERNET – ZTEC 411
Average time for course completion: 25 hours
Investment: $580
LAP 1 Industrial Communications Networks
LAP 2 Remote Input/Output
LAP 3 Produced/Consumed Data and Messages
LAP 4 Troubleshooting EtherNet/IP

PLC ALLEN-BRADLEY DEVICENET FOR CONTROLLOGIX – ZTEC 429
Average time for course completion: 15 hours
Investment: $420
LAP 1 Industrial Communication Networks
LAP 2 DeviceNet Input/Output
LAP 3 DeviceNet Troubleshooting

PLC ALLEN-BRADLEY CONTROLNET FOR CONTROLLOGIX – ZTEC 430
Average time for course completion: 15 hours
Investment: $420
LAP 1 Industrial Communications Networks
LAP 2 Remote Input/Output
LAP 3 Produced/Consumed Data and Messages

PLC ALLEN-BRADLEY COMPACTLOGIX - L16 ZTEC 454
Average time for course completion: 80 hours
Investment: $2,230
LAP 1 Introduction to Programmable Controllers
LAP 2 Basic PanelView Terminal Operartion
LAP 3 PLC Program Operations
LAP 4 PLC Programming
LAP 5 PLC Motor Control
LAP 6 PLC Timer and Counter Instructions
LAP 7 Event Sequencing
LAP 8 Program Control Instructions
LAP 9 Math and Data Move Instructions
LAP 10 PanelView Plus Application Editing
LAP 11 PanelView Plus Application Editing 2
LAP 12 Analog Inputs
LAP 13 Analog Outputs
LAP 14 Variable Output Applications

PLC TROUBLESHOOTING ALLEN BRADLEY COMPACTLOGIX - L16 ZTEC 455
Average time for course completion: 20 hours
Investment: $580
LAP 1 Introduction to PLC Troubleshooting
LAP 2 PLC Systems Troubleshooting
LAP 3 Analog Input/Output Troubleshooting
LAP 4 Analog Application Troubleshooting

Allen-Bradley

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

Siemens

SIEMENS

PLC SIEMENS S7-300 LEARNING SYSTEM WITH TROUBLESHOOTING - ZTEC 412
Average time for course completion: 80 hours
Investment: $2230
LAP 1 Introduction to Programmable Controllers
LAP 2 Basic PLC Programming
LAP 3 PLC Motor Control
LAP 4 Discrete I/O Interfacing
LAP 5 PLC Timer Instructions
LAP 6 PLC Counter Instructions
LAP 7 Introduction to PLC Troubleshooting
LAP 8 PLC Systems Troubleshooting
LAP 9 Event Sequencing
LAP 10 Application Development
LAP 11 Program Control Instructions
LAP 12 Math and Data Move Instructions

PLC ANALOG LEARNING SYSTEM SIEMENS S7-300 – ZTEC 413
Average time for course completion: 25 hours
Investment: $580
LAP 13 Analog Input Modules
LAP 14 Analog Input Applications and Troubleshooting
LAP 15 Analog Output Modules
LAP 16 Analog Output Applications and Troubleshooting

PLC PROFIBUS SYSTEM SIEMENS S7 – ZTEC 414
Average time for course completion: 15 hours
Investment: $405
LAP 1 Industrial Comm Network (Siemens S7-300 Profibus)
LAP 2 Data Exchange

PLC SIEMENS TP1200 OPERATOR PANEL LEARNING SYSTEM – ZTEC 415
Average time for course completion: 15 hours
Investment: $420
LAP 1 Introduction to Siemens HMI Panel
LAP 2 Application Editing 1
LAP 3 Application Editing 2

PLC SIEMENS S7-300 REMOTE I/O – ZTEC 444
Average time for course completion: 5 hours
Investment: $175
LAP 1 - Remote Input/Output

Instrumentation and Process Control

AC/DC ELECTRICAL SYSTEMS ZTEC 205 AND ELECTRIC MOTOR CONTROL ZTEC 207 ARE PREREQUISITE COURSES FOR PLC TRAINING.

PROCESS CONTROL SYSTEM – ZTEC 416
Average time for course completion: 60 hours
Investment: $1,570
LAP 1 Introduction to Process Control
LAP 2 Instrument Tags
LAP 3 Piping and Instrumentation Diagrams
LAP 4 Loop Controllers
LAP 5 Final Control Elements
LAP 6 Level Measurement
LAP 7 Liquid Level Control
LAP 8 Methods of Automatic Control
LAP 9 Basic Flow Measurement and Control
LAP 10 Control Loop Performance
LAP 11 Ultrasonic Level Measurement and Control
LAP 12 Differential Pressure Flow Measurement and Control

THERMAL PROCESS CONTROL – ZTEC 417
Average time for course completion: 60 hours
Investment: $1,570
LAP 1 Introduction to Process
LAP 2 Control Instrument Tags
LAP 3 Piping and Instrumentation Diagrams
LAP 4 Thermal Energy
LAP 5 Basic Temperature Control Elements
LAP 6 Loop Controllers
LAP 7 Final Control Elements
LAP 8 Temperature Sensors and Transmitters
LAP 9 Temperature Transmitters
LAP 10 Basic Temperature Control
LAP 11 Methods of Automatic Control
LAP 12 Control Loop Performance

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

INDIVIDUAL COURSES - UPGRADE YOUR SKILLS

Automation has crossed into all plateaus of modern manufacturing. From raw materials to the finished product, manual labor has been replaced with robots, automatic equipment and computer networks, all in effort to produce items that are more accurately made and less costly to manufacture. The workforce needed to service these industries now and in the future will require additional skills.

The Flexible Manufacturing System builds on basic robot operation and programming and adds linear motion, serial communications and multitasking applications.

FLEXIBLE MANUFACTURING SYSTEMS – ZTEC 510

Average time for course completion: 50 hours
Investment: $1,460
PREREQUISITE ZTEC 543 - ROBOTICS AND COMPUTER PROGRAMMING

LAP 1 Intro to Flexible Manufacturing Systems
LAP 2 Point-to-Point Assembly
LAP 3 Linear Motion Assembly
LAP 4 Palletizing
LAP 5 Robot FMS Workcell
LAP 6 Robot Communications
LAP 7 Serial Device Applications
LAP 8 Multitasking

MOTION CONTROL (SERVO) LEARNING SYSTEM – ZTEC 520

Average time for course completion: 36 hours
Investment: $1,270

Teaches the fundamentals of current industrial servo drive systems. Servo drives are the core components to precise positioning in packaging, labeling, conveying and CNC machining environments.
LAP 1 AC Motion Control
LAP 2 Drive Configuration, Tuning and Operation
LAP 3 Motion Control System Configuration
LAP 4 Motion Control System Programming
LAP 5 Position Control
LAP 6 Velocity and Current Controls

MOTION CONTROL (SERVO) LEARNING SYSTEM 2 – ZTEC 521

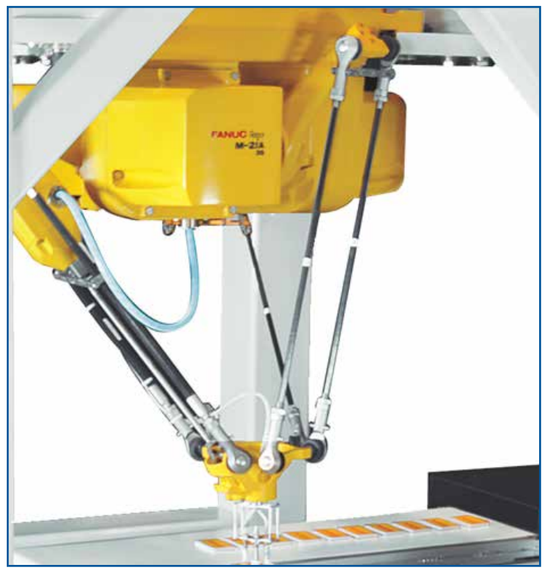
Average time for course completion: 24 hours
Investment: $845
PREREQUISITE ZTEC 520 - MOTION CONTROL (SERVO) LEARNING SYSTEM

Teaches multi-axis servo drive configurations as essential for synchronizing multiple operations in packaging, labeling, conveying, CNC machining environments and warehouse management systems.
LAP 1 Multi-Axis Motion Control Systems
LAP 2 Motion Control Camming
LAP 3 Synchronized Motion

ROBOTICS AND COMPUTER PROGRAMMING – ZTEC 543

Average time for course completion: 50 hours
Investment: $1,515

LAP 1 Basic Robot Operation
LAP 2 Basic Robot Programming
LAP 3 Interfacing & Material Handling
LAP 4 Application Development
LAP 5 Flexible Manufacturing Cells
LAP 6 Quality Control
LAP 7 Production Control



These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

MOTOMAN MERIT CERTIFIED ROBOT FS100 BASIC PROGRAMMING WITH MATERIAL HANDLING

ZTEC 556

Average time for course completion: 32 Hours

This training is provided by RACC as a Motoman Merit Certified facility. The course is designed to help students learn to program and Controller using INFORM programming language (similar to the DX100).

- Safety
- Startup and Shutdown
- Pendant overview
- Jogging in all Coordinate Systems
- Copying, Creating, Deleting and Editing Jobs
- Alarm and Error Recovery,
- Programming and Monitoring Input/Output
- Using Math and Position Variables

YASKAWA

SUPERVISORS AND MANAGEMENT

INTRO TO MOTOMAN FS100 BASIC PROGRAMMING WITH MATERIAL HANDLING

ZTEC 559

Average time for course completion: 8 Hours
Investment: $415

Learn and understand the features of the FS100 Robot Controller and Programming Pendant using the INFORM programming language.

- Startup and Shutdown
- Tech Pendant Familiarization
- Pendant Screen
- Jogging and Coordinates
- Alarms and errors
- Selecting a Job
- Robot and Tool Path
- Non-Motion Instructions with Demonstration Program

INTRO TO FANUC® ROBOTS WITH HANDLING TOOL SOFTWARE

ZTEC 554

Average time for course completion: 8 Hours
Investment: $415

- Robot Safety
- Robot Systems
- Teach Pendant Overview
- Power Up and Jogging
- Frames and Programs Overview
- Instruction Overview
- Inputs/Outputs
- Hands-on Labs and Quizzes

These courses have an open start date.
Contact 610.372.4721, ext 5716 or jvecchio@racc.edu for details.

WORKFORCE
READING AREA COMMUNITY COLLEGE
SCHMIDT TRAINING & TECHNOLOGY CENTER

Mechanical Lab

Electrical Lab

Information Technology Lab

PLC Networking Lab

Smart Automation & Robotics Lab

Machining Lab

WASTEWATER TREATMENT PLANT OPERATOR - CERTIFICATION PROGRAM -

90 Hour Fall Program - ZWTR 120
Price: $1495
T/Th from 6PM - 9PM

90 Hour Spring Program - ZWTR 121
Price: $1495
T/Th from 6PM - 9PM

How You Will Learn – We combine course work with onsite visits to local Wastewater Treatment facilities, plus interactive class discussion with certified operators, out of class assignments, and module end exams.

to register call 610.607.6235

Program Description - This 180-hour certification program prepares you for licensing as a wastewater treatment plant operator. The curriculum was developed by the Pennsylvania Department of Environmental Protection (DEP) to prepare for the DEP's Operator Certification Exams. Combining this program with work at a local treatment facility will prepare participants for licensing.

Contact Judith Vecchio for questions and further details at jvecchio@racc.edu | 610.372.4721 Ext. 5716

The auctioneering program meets all educational course requirements necessary to sit for the Pennsylvania State Auctioneer Licensing Exam.

BECOME A CERTIFIED AUCTIONEER!

Course Begins
AUGUST 14, 2023
Cost: $3,800
The class is taught live in an interactive, remote format.

- Learn the "auctioneer chant"
- Appraisals - antiques, autos, dolls, coins, jewelry, furniture, and more
- Auction laws
- Auctioneering software and online auctions
- 60 hours of observing and working hands-on with a local auctioneer

SCAN ME

Please call 610.375.8188 for more information.

Reading Area Community College
Community Education
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Reading, PA 19603-1706

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PMI TRAINING