



www.rmctc.org

The Engineering & Automation Technology Program

CIP 15.0403

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Have Questions?

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Prices listed are subject to change.

* *Additional information about these items can be found in the Student Handbook*

It is the policy of Reading Muhlenberg CTC not to discriminate on the basis of sex, handicap, race and national origin in its educational and vocational programs, activities, or employment as required by the Title IX, Section 504, and Title VI.

READING MUHLENBERG CAREER & TECHNOLOGY CENTER

MISSION STATEMENT

The Reading Muhlenberg Career & Technology Center, in partnership with our diverse community, sponsoring districts, and business and industry, is committed to providing quality career and technical education, resulting in opportunities for students to gain employment, pursue post-secondary education, and develop an appreciation for lifelong learning.

VISION STATEMENT

To empower Reading Muhlenberg Career & Technology Center students with the technical knowledge and skills to confidently pursue a career.

BELIEFS

- We believe in valuing the diversity of each student
- We believe education leads to opportunity
- We believe quality education starts with quality leadership
- We believe a career and technical education is a critical component of workforce development
- We believe technology is vital to learning and will help students connect with a rapidly changing world
- We believe technology must be embraced by teachers as a tool to help prepare students to meet current and future labor market demands
- We believe in providing all students with a positive educational experience
- We believe students should feel proud of what they have accomplished each day
- We believe students will be provided the opportunity to achieve their highest potential
- We believe students will be provided the opportunity to acquire and cultivate leadership skills
- We believe in providing students with a safe school environment
- We believe the success of a student is enhanced by parents and/or other influential adults through their support and involvement
- We believe in encouraging students to maintain a lifelong affiliation with the school
- We believe change is an ongoing process, not an event, and is fundamental for building quality programs of study
- We believe instruction must accommodate individual student learning styles

ENGINEERING & AUTOMATION TECHNOLOGY - EAT

- Develop the knowledge of diverse engineering systems, including electrical, mechanical, hydraulic, pneumatic, and PLC controls.
- Learn test equipment, soldering techniques, design and troubleshoot mechanical and electrical systems, motor controls and PLC technology.
- Effectively apply problem solving and leadership skills in a field that offers a multi-disciplinary approach to product and manufacturing system design.
- Enroll in a challenging and rewarding program leading to “high priority” jobs right here in Berks County or continue onto a post-secondary college of your choice.



Job Titles – Career Pathways

17-3023 Electrical and Electronics Engineering Technicians

17-3024 Pre-Electromechanical Technician

17-3026 Pre-Industrial Engineering Technician

17-3027 Mechanical Engineering Technicians

49-9041 Industrial Machinery Mechanics

49-9042 Industrial Maintenance and Repair Mechanic

49-9098 Installation, Maintenance, and Repair Workers

CTC knowledge transfers to college credits at:

Clarion University of Pennsylvania

Harrisburg Area Community College

Northampton County Area Community College

Reading Area Community College

Student Certifications

NOCTI - National Occupational Competency Testing Institute Certification

* Electromechanical Engineering Technology

AMIST Certification - Level 1 & 2

Instructor – Benjamin Harmuth

Biography

I grew up in the Lebanon area, graduating from Cedar Crest High School. I excelled in my drafting and design course at Lebanon County Career & Technology Center. My instructor encouraged me in pursuit of my career as an engineer and I attended Thaddeus Stevens College graduating with an Associate of Applied Science Degree. I then continued my education at Penn State earning my Bachelor's Degree in Mechanical Engineering. I worked as a Design Engineer and Project Engineer at local companies before accepting a teaching position at Thaddeus Stevens. Realizing my passion was for teaching and working with students, I joined the team at RMCTC.

Education

Associate of Applied Science, Mechanical Engineering Technology, Thaddeus Stevens College of Technology
Bachelor of Science, Mechanical Engineering Technology, Penn State University

Certifications & Awards

Professional Engineer in Training certificate (ET017579)
Certified Investment Casting Specialist

Work Experience

Butler Manufacturing Company, 3 years
Tech Cast, LLC, 2 years
Thaddeus Stevens College, 1 semester

Hire Date 2014

Community Service

Sound technician at church

GRADE REPORTING

Purpose: The intent of this grading procedure is to provide a student grade that accurately reflects student achievement. Progress will be measured in the areas of work ethics, and knowledge. All activities and assessments that are required as the student progresses through their skills (learning guides) will be reflected within the knowledge grade. Students will be evaluated according to established program standards on an individual basis. The ClassMate grading software automatically calculates student grades using the following formula:

Work Ethic 40%
Knowledge 60%
100%

Teachers must be able to justify grade percentages in the event of inquiries or concerns.

Interpreting a Grade: The two levels of evaluation are described below:

Work Ethics Grade (40%): Each school day, every student receives a Work Ethics or daily grade. Criteria that comprise these grades are safety, student behavior, preparation/participation, productivity or time on task, professional appearance and extra effort. The Work Ethics grade range is based on a 0 to 10 model that students may earn each day depending on how many criteria they satisfactorily meet.

NOTE: Impact of Absenteeism, Tardiness/Early Dismissals - The direct effect of absenteeism on a students' grade will be through the Work Ethic component of the grading formula. If a student is Tardy or has an Early Dismissal the Work Ethic grade will automatically be defaulted to a five (5) from a possible ten (10) points. The instructor may change this value as they see fit.

Knowledge Grade (60%): Throughout the marking period, a student's cognitive knowledge about various career-specific topics will be evaluated and recorded by the instructor. Examples of knowledge activities include: lab/shop assignments, homework, quizzes, tests, and research activities. The Knowledge grade range is based on actual points earned divided by the total accumulative points.

Task tracking: For the purpose of students earning a job title associated with their program are, teachers track students' skill/task work. Teachers identify specific criteria to evaluate each task performed, ranging from a 0 to 5 (not completed to mastery). Students must earn a 4 or 5, in order to credit the task towards earning the specific job title. Students have the opportunity to revisit a task multiple times until successfully receiving credit. The job titles a student earns will be listed on the student's RMCTC certificate that is awarded at Senior Recognition Night.

GRADE REPORTING (continued)

CTC Letter Conversion Table Grade Letter

100 – 97 A+
96 – 93 A
92 – 90 A-
89 – 87 B+
86 – 83 B
82 – 80 B-
79 – 77 C+
76 – 73 C
72 – 70 C-
69 – 65 D
64 – under F

Final Grade average is based on the student's four (4) numerical marking period grades. The final average will directly align to the letter conversion table listed above.

If a student has three (3) marking period grades of "F" the teacher shall give appropriate consideration to that student not passing for the year. If a student is on an **upward trend** at the end of the school year, this **may** justify having the student pass for the year. If the opposite is true, and the student is on a **downward trend**, the student **should** receive a failing grade.

The individual teacher must evaluate each student's achievement in terms of the expected goals for their program area.

Failure to complete assignments, frequent lateness or absence, and demonstrated indifference to school are major contributors to student failure. **Blatant refusal** to attempt or to complete a significant number of course requirements may, by itself, justify a final course grade of "F".

The following divisions are given as a guide to recording and interpreting the grading system. It remains for each teacher to objectively and fairly rate each student, not based upon personality, but performance.

Determination of Grades: Teachers will give thorough consideration using all grading components in determining students' grades to both class work and test results.

A = Excellent

1. This grade represents **superior work** and is distinctly an honor grade.
2. The excellent student **has reached all course objectives** with high quality achievement.
3. The excellent student displays unusual effort and works willingly and effectively in reaching required objectives.

GRADE REPORTING (continued)

B = Good

1. This grade represents **above average** quality achievements.
2. The good student **has reached a large majority of course objectives.**
3. The good student is industrious and willing to follow directions.

C = Average

1. This grade represents **acceptable** quality achievements.
2. The average student **has reached a majority of course objectives.**
3. The average student is cooperative and follows directions, yet extra effort and improvement are needed for more complete mastering of the material.

D = Passing

1. This grade represents a **minimum acceptable** quality achievement.
2. The student is performing below-average work and **has not reached a majority of course objectives.**
3. This achievement level indicates there is a great need for improvement, daily preparation and improved dedication and attendance.

F = Failure

1. This grade represents **unacceptable** quality achievements.
2. The failing student **has not reached necessary course objectives.**
3. The failing student has not attempted to complete assignments, is constantly late or absent, and generally has failed to accomplish the fundamental minimum essentials necessary in the program area.
4. It may be noted that generally a student does not fail because of a lack of ability; failure may be caused by laziness, non-dedication, or a general disregard to directions of the teacher and the unwillingness to use whatever ability he/she possesses.

Incomplete Grades: Incomplete grades must be updated no later than ten (10) days from the close of the marking period. As soon as the work is completed and the grade is available, it must be reported to the appropriate person.

Failures: Students who receive a failing final grade in a program area are permitted to repeat that program, but are urged not to do so for obvious reasons. If this situation presents itself, students and parents are advised to consider an alternative program which is probably more suited to the student's true interests and aptitudes and not merely satisfying a short-term or unrealistic desire.

Attendance and its Impact upon Grades: The importance of regular school attendance and its positive impact upon a student's performance grade cannot be overstated. If a student is absent, he or she does not have the opportunity to keep pace with their classmates and must work independently to acquire the information missed during any absence. Regardless of how well a student performs when he/she is present, habitual absenteeism usually results in a failing performance grade. This situation is not unlike the conditions of the business or industry for which the student is being trained.

GRADE REPORTING (continued)

Make up Work for Absences: Students have the opportunity to make-up school work due to an illness/being absent from school. **PROVIDED** their absence is excused. Students must submit make-up work within the following timelines:

1. One (1) to three (3) days excused absences – five (5) school days to complete assigned work.
2. Four (4) or more days excused absence – ten (10) school days to complete assigned work.

All work missed through unexcused absences will be graded as a zero

Report Cards (See Progress Reports): Students will receive a report card from the sending school district which will reflect the student's grade from their Career & Technology program. Students will also receive a report card from RMCTC reflecting their program grade and Social Studies grade, where applicable. In addition, grades are available on the parent portal.

Senior Recognition Night: Reading Muhlenberg Career & Technology Center hosts an annual Senior Recognition Night, which honors our senior students. During this event, all senior students in attendance are recognized and may also receive awards that they have earned relevant to their accomplishments while attending Reading Muhlenberg CTC.

PARENT PORTAL: The Parent Portal is available for parents/guardians to view your child's progress by accessing the RMCTC District Portal on the School's web-site; www.rmctc.org. This will give you up to date information related to your child's attendance, grades (work ethic and knowledge), discipline referrals and schedule. In order to use this resource, you must provide the CTC with a current email address and register online.

Log onto www.rmctc.org, click on "**Parents**", then click on "**parent portal**" which will navigate you to the link where you will log into the portal. You will have to "**create an account**" on your first visit to the portal by using your email address (you need to use the email address you provided us on your child's application) and setting up a password. Once registered you may return at any time to view your child's information. Please utilize our website, to track your child's progress by viewing their grades and attendance, along with any discipline action. In addition you will be able to review your child's report cards & progress reports as soon as they are available. You also have the ability to select the option to receive email notifications for specific instances that you choose. You can choose to receive an email automatically if your child is absent/tardy or both, if your child receives a discipline referral or suspension and if your child receives a specific grade.



Reading Muhlenberg CTC
2615 Warren Road
Reading, PA 19604
(610) 921-7300

Student Progress Report - MP 1

Student Name:

Student Address

 Reading, PA

Progress Report # : 1
 Sending School:
 Location: Reading Muhlenberg CTC
 Enrollment Date:
 Course:
 Class:
 Instructor:
 Grade:

Questions regarding this report can be answered by calling your child's teacher at (610) 921-7300. If the teacher is not available when you call, please leave your name and telephone number and your call will be returned.

Your child's progress in this class is:
 Knowledge:

Grade to Date: As of

Knowledge Comments / Recommendations:

Skill Comments / Recommendations:

Work Ethic/PDP Comments/Recommendations

<u>Attendance Report</u>	<u>Excused Absences</u>	<u>Unexcused Absences</u>	<u>Unexcused Tardy</u>
Year To Date Totals	0.00	0.00	0.00
Current marking period	0.00	0.00	0.00

Instructor's Signature: _____

Issue Date:

Student's Signature: _____

Sign Date: _____

Parent's Signature: _____

Sign Date: _____

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2615 Warren Road
Reading, PA 19604
(610) 921-7300

School Year

ANNUAL EDUCATIONAL AND OCCUPATIONAL OBJECTIVES FOR STUDENTS ENROLLED IN A PDE-APPROVED CAREER AND TECHNICAL EDUCATION (CTE) PROGRAM

INSTRUCTIONS: This form is to be completed each year by students enrolled in a Pennsylvania Department of Education (PDE) approved CTE program with the intent to take further technical instruction offered by the program to achieve a related occupational objective. The scope and sequence for the PDE approved program serves as the educational plan.

Form is to be completed by student and verified and signed by the instructor and guidance /career counselor:

STUDENT'S NAME:

Gender: Birthdate: Current Grade:

SECONDARY SCHOOL OFFERING APPROVED CTE PROGRAM: Reading Muhlenberg CTC

SENDING SCHOOL DISTRICT (for CTCs/AVTSs/Charter Schools):

This student is enrolled in technical instruction offered by the following approved CTE program and associated Classification of Instructional Program (CIP):

PROGRAM NAME: Electromechanical Tech CIP Code: 150403

1. Is student enrolled in approved Tech Prep/Program of Study (POS) program technical instruction? Yes or No (Circle one)

2. If yes, is student taking minimum academic coursework per approved Tech Prep/POS program scope and sequence? Yes or No (Circle one)

3. Student's plans following high school graduation include: (Check all that apply) Yes or No (Circle one)

Employment or Military service/training - Specify Branch

Postsecondary education: College Technical School / Proprietary School

4. Student's program-related occupational objective:

Career Pathway

As a student enrolled in this program, my career objective is to prepare for and explore the following career pathway(s).

- Electromechanical Engineering Technologists
Electro-Mechanical Technicians
Helpers--Installation, Maintenance, and Repair Workers
Maintenance and Repair Workers, General
Mechatronics Engineers
Program of Study - SOAR

*This information is not auditable by the Office of Auditor General. I understand that this information will become part of my permanent file with Reading Muhlenberg CTC, 2615 Warren Rd., Reading, PA 19604. I also understand that this information will be forwarded to my home school district counseling office.

Student's Signature Date

Counselor's Signature Date

Instructor's Signature Date

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Pennsylvania State Board of Education, Chapter 4 Section 4.31(e) states that a student's record shall include the student's educational and occupational objectives. This form (PDE-408) or similar, locally developed form must be completed and signed each school year by the student enrolled in planned technical courses/instruction offered by the program and must be maintained in school files. The Office of the Auditor General will review student records to determine if the technical courses/instruction taken by the student coincide with the planned courses/instruction documented for the approved CTE program.

**15.0403 Electromechanical Technology/Electromechanical
Engineering & Automation Technology**

Develop Elementary Engineering Skills

Create original engineering drawings using 2D and 3D CAD software.

Organize and maintain engineering documentation including a daily timecard and journal.

Research and develop an original technical report on an engineering based subject.

Laboratory Safety

Demonstrate safety in the laboratory.

Demonstrate safe and proper use of hand and power tools.

Identify fire dangers and shock hazards and use appropriate fire extinguishers for different classes of fires.

Explain the importance of MSDS information.

Demonstrate proper Lock Out/Tag Out procedures in the workplace.

Demonstrate understanding of NFPA 70E.

MET 100

Demonstrate the function and operation for use of a variety of bench work tools.

Plan, layout, and produce a part using layout and hand tools.

Demonstrate the function and safe operation for use of a horizontal and vertical band saw.

Select stock size and type and cut according to a drawing.

Demonstrate the function and safe operation for use of a drill press.

Perform drilling and reaming on a drill press.

Perform tapping and threading on a drill press.

Perform countersinking, counter-boring, and chamfering operations on a drill press.

Demonstrate the function and safe operation for use of a manual milling machine.

Demonstrate correct use of controls on a vertical milling machine.

Perform a rectangular pocket milling operation.

Perform a slot cutting milling operation.

Perform facing and stepping milling operations.

Demonstrate the function and safe operation for use of a manual lathe.

Select stock size and type and perform rough and finish cutting operation with manual and automatic feed on a manual lathe.

Create an external chamfer and threads using a lathe.

Evaluate and sharpen tools as appropriate.

Organize a defined workspace using 5S methodology.

IFT 100

Create and edit a document.

Create and edit formats, footnotes and paragraphs.

Add and edit tables and charts.

Create and edit a worksheet.

Create and edit graphs and associated data.

Create and edit data in multiple worksheets.

Create and edit a database.

Develop a query.

Change the database structure properties and formats.

Create and edit a slide presentation.

Add and edit text graphics and tables in a slide.

Manage Windows XP/File Management.

MET 120

Demonstrate safety rules while working with mechanical, pneumatic and hydraulic equipment.

Calculate and measure multiple variables in both English and SI unit for a variety of drive types and configurations.

Explain the function and application of bearings in a mechanical system.

Install and align electric motors using shafts, bearings, keys and couplings.

Select appropriate components and construct a variety of flexible V-belt drive systems.

Perform preventative and reactive maintenance steps and troubleshooting procedures for V-belt drive systems.

Explain the function and operation of sprockets in a variety of chain drive systems.

Select appropriate components and construct a variety of chain drive systems.

Perform preventative and reactive maintenance steps and troubleshooting procedures for chain drive systems.

Utilize Pascal's and Boyle's Laws to compare calculated and measured values for variables found in industrial pneumatic systems.

Select appropriate components and design a working pneumatic circuit utilizing a variety of components.

Connect, adjust, and operate the pneumatic circuit.

Perform preventative and reactive maintenance and troubleshooting procedures for industrial pneumatic systems.

Utilize Pascal's Law and pressure drop (AP) to compare calculated and measured values for variables found in industrial hydraulic systems.

Select appropriate components and design a working hydraulic circuit utilizing a variety of components.

Connect, adjust, and operate the hydraulic circuit.

Demonstrate function and operation of hydraulic speed, flow, pressure control, and cylinder synchronization and regeneration.

Identify function and operation of a pressure-compensated hydraulic pump.

Perform preventative and reactive maintenance and troubleshooting procedures for industrial hydraulic systems.

Select appropriate components and design a working piping system utilizing a variety of components.

Construct and assemble fluid piping system using various types of pipes, fittings, hoses, and tubing.

Select appropriate components, design, and maintain a working hydraulic circuit utilizing expansion joints, insulation, and fluid power conductors.

MET 130

Demonstrate safety rules while working with electrical equipment under 600 volts.

Explain the atomic structure for materials.

Explain the origins and applications of magnetism.

Utilize Ohm's and Kirchhoff's Laws to compare calculated and measured values for a combination of resistive, capacitive, and inductive circuits.

Select appropriate components and design a working electrical circuit utilizing a variety of components.

Identify function and operation for 3-phase motor control circuits.

Select appropriate components and design a functioning motor control circuit utilizing a variety of control components.

Identify function and operation for AND, OR, NOT, NOR and NAND logic and memory.

Interpret elementary ladder diagrams for AND, OR, NOT, NOR and NAND logic and memory.

Select appropriate components and design a functioning ladder logic and memory circuit utilizing a variety of logic components.

Perform preventative and reactive maintenance and troubleshooting procedures for industrial electrical systems.

Identify function and operation for a typical electro-pneumatic control operation.

Select appropriate components and design a functioning electro-pneumatic control operation utilizing a variety of control components.

Identify function and operation for a typical electro-hydraulic control operation.

Select appropriate components and design a functioning electro-hydraulic control operation utilizing a variety of control components.

Perform preventative and reactive maintenance and troubleshooting procedures for industrial electro-pneumatic control systems.

Perform preventative and reactive maintenance and troubleshooting procedures for industrial electro-hydraulic control systems.

Identify appropriate methods for wiring residential or commercial construction.

Select appropriate components for installing EMT and IMT conduit systems.

Design and install a functional wiring system in compliance with NEC requirements.

Demonstrate methods of electrical wiring to wire a completely functional industrial machine.

**15.0403 Electromechanical Technology/Electromechanical
Engineering & Automation Technology**

MET 140 A

Identify the function and operation of PLC.
Demonstrate the ability to run, stop, and monitor a SLC 500 PLC.
Develop a program for the PLC.
Enter a program for the PLC.
Edit a program for the PLC.
Load a program for the PLC.
Save a program for the PLC.
Print a program for the PLC.
Perform preventative and reactive maintenance and troubleshooting procedures for a SLC 500 PLC.
Identify how a PLC used ladder logic to control a sequential operation.
Design and operate a SLC 500 PLC program for an industrial application.
Interface a PLC input and output module to control an industrial robot application.

Program SLC 500 intermediate PLC operation using ladder logic arithmetic.
Develop a human machine interface industrial application.
Develop an industrial automated manufacturing application.
Perform preventative maintenance and troubleshooting procedures of an industrial SLC 500 PLC applicaton.

Employability Skills

Establish career goals and develop a plan to meet goals.
Complete a job application.
Compose a resume, reference list and cover letter.
Prepare for a job interview.
Compose various employment letters, i.e. thank you and resignation.
Participate in online career search & develop online accounts.
Create a career portfolio.

Certifications

OSHA Certification
AMIST level I
AMIST level II

PORTFOLIO

All students will be required to create a portfolio to showcase their accomplishments. A portfolio is a collection of work related to education, employment, and self-development.

The Portfolio will contain the following:

- a. Title Page
- b. Table of Contents
- c. Resume with Reference List
- d. Achievements-
 - 1. Awards
 - 2. Certifications
 - 3. Transcripts
 - 4. CTSO information
 - 5. PSC certificates (NOCTI)
- e. Skill Set
 - 1. Task List
 - 2. Certificate of Competency
- f. Work Samples
 - 1. Pictures
 - 2. Writing Samples
 - 3. Videos
- g. Other Related Information
 - 1. Computer Applications
 - 2. Community Activities
 - 3. Talents
 - 4. Sports
 - 5. Clubs

READING-MUHLENBERG CAREER & TECHNOLOGY CENTER

WORK BASED LEARNING Cooperative Education & Internships RULES / GUIDELINES

1. All Work Based Learning (WBL) students must have school WBL forms completed before starting the job/internship, and any student less than 18 years of age must also have a transferable work permit.
2. **ABSENT FROM SCHOOL????? – NO WORK!!!!!!!**
 - If you are absent from school in the morning, you may **NOT** go to work in the afternoon. **YOUR JOB IS PART OF YOUR SCHOOL DAY.** If you are at a **medical, social service, or court appointment** in the AM, you **may** go to work that day. However, you must bring a note **from the agency where you were**, to your attendance secretary, the next school day.
 - If you are ill, **YOU** must call your employer to inform him/her that you will not be reporting for work.
 - **IMPORTANT:** If your name is going to appear, for any reason, on your sending school absentee list, you must also **report off to Mrs. Albarran @ 610-921-7301. Failure to report off will result in removal from WBL.**
 - If **school is closed** for a holiday, in-service day, or a snow day, you **DO** go to work on those days, if you are scheduled.
 - If you are suspended **out of school** you may not work at your WBL job. This includes jobs that are scheduled with after school hours.
 - **REPETITIVE ABSENCES** at school or work will result in your removal from Work Based Learning.
3. All WBL students are required to **report to the CTC every Monday.** Any additional classroom time is at the discretion of your program area teacher. You are responsible for communicating this to your employer. On the **first Monday of each month**, immediately upon arrival, report directly to **Student Services**, where you will sign in with Mrs. Baller. Co-op students will record hours and earnings, and then return to your program area for the remainder of the school day. **Don't forget to bring your check stubs to record your hours and earnings!** Internship students will record hours. **If you miss two Monday meetings, you will be removed from WBL.**
 - Any violations of these rules will result in the following **discipline action:**
 - 1ST violation – VERBAL WARNING**
 - 2nd violation – REMOVAL FROM WORK BASED LEARNING**
6. When at work you are guided by and are responsible to your employer. Be sure to follow all of the Employers' rules and regulations because you will be terminated for the same reasons as any other employee.
7. If your work experience is terminated for any reason, you must return to school the next day, and inform your CTC teacher and the Work Based Learning Coordinator.
8. If you wish to terminate your employment, you must discuss this with your teacher and the Work Based Learning Coordinator, and leave the job properly by giving the employer a two-week notice and a letter of resignation.
9. If you have any questions concerning the rules and guidelines of Work Based Learning, please contact the WBL coordinator at 610-921-7337.

STUDENT SIGNATURE

PARENT/GUARDIAN SIGNATURE

Articulation Agreements

The Reading Muhlenberg Career and Technology Center has agreements with the following:

Clarion University of Pennsylvania

Harrisburg Area Community College

Northampton County Area Community College

Reading Area Community College

STUDENTS OCCUPATIONALLY & ACADEMICALLY READY



- *Earn college credits which will save you money on tuition*
 - *Shorten college attendance*
 - *Get on the right career path*
 - *Enter the job market prepared*
 - *Get a consistent education*
- *See your CTC School Counselor for More Information*

TO QUALIFY CTC STUDENTS MUST:

1. Earn a high school diploma, achieve a minimum 2.5 GPA on a 4.0 scale in your CTC program and complete the PDE approved Program of Study.
2. Earn the industry certifications offered by your program (if applicable).
3. Achieve Competent or Advanced on the NOCTI End of Program Assessment.
4. Achieve proficiency on ALL of the Program of Study Competency Task List.
5. Provide documentation to Postsecondary Institution that you have met all of the requirements!

Find out more about the colleges offering course credits you can earn while attending RMCTC. Go to collegetransfer.net, search: PA Bureau of CTE SOAR Programs, and find your program by CIP Code.



**To receive college credits, qualifying students have three years from their date of graduation to apply and matriculate into the related career and technical program at a partnering institution.*

Program Planning Tool

Program Title: CIP 15.0403 ENGINEERING & AUTOMATION TECHNOLOGY

Student Name: _____

This document has been designed as a tool to facilitate student placement decisions and provides important information about the program. The chart on the reverse side is designed to assist in the identification of necessary skills, present educational levels, and supports, if any, that are needed to foster program success.

Program Completion Requirements

A successful student will...

- Secondary Academic Course Requirements: The PA Dept. of Education's focus is to ensure every student is college and career ready, therefore all students are recommended to follow a college prep sequence of academic classes. Courses such as applied math or general science are not appropriate for this program. PDE's goal is to have all students perform at the competent or advanced level on the Keystone Exams and Program of Study end-of-program assessment (NOCTI).
- Complete an Occupational Competency Assessment (i.e. NOCTI end-of -program exam) and score at the "competent" or "advanced" level. This end-of -program exam will cover the full scope of the program of study curriculum and includes (1) a multiple choice test and (2) a performance test consisting of occupational related tasks scored and evaluated by industry judges.
- Earn a minimum of one industry recognized certification. Students will be encouraged and expected to earn all recognized industry certifications that make up the scope of the curriculum. Accommodations are not permitted for industry certifications. These include OSHA and AMIST
- Complete the approved program curriculum and earn a minimum of one RMCTC Job Title aligned with the student's career objective. Job titles are identified on the program task list, aligned with local workforce needs and high priority employment occupations, and annually reviewed and approved by the program's occupational advisory committee.
- Successful completion of Keystone Exams as determined by sending school district.
- Maintain a 95% attendance rate or better.
- Transition on to a post-secondary institution, military or related fulltime employment aligned to their CTC program of study.

Instructional Process/Specifications

A successful student will...

- Perform a wide variety of tasks in a laboratory environment with equipment consistent with industry standards. Up to 25 students are assigned to work "independently" and in "small teams". Students progress by using learning guides in a self-directed manner.
- In the lab, students are required to use measuring tools and operate various equipment including grinders, lathes, milling machines, drill presses, hand and power tools, and trainers. Students will also work with chemicals including cutting oils, solvents, and coolants. Using equipment requires self-discipline and strict adherence to rules to ensure safety of self and others. The lab simulates a real working environment therefore students will be exposed to the noise levels, dust, debris, and fumes. Using equipment requires self-discipline and strict adherence to rules to ensure safety of self and others. Students will be exposed to the high noise levels, dust, debris, chemicals and fumes.
- Participate in classroom theory and laboratory applications for generally 2 ½ hours each day; students will spend 40% of their time in classroom theory and 60% of their time doing laboratory applications and live work.
- Participate in Career & Technical Student Organizations including SkillsUSA and/or National Technical Honor Society.
- Participate in a paid or unpaid work based learning related to the Program of Study (cooperative education, clinical internship, and/or job shadowing).
- Complete written and performance tests. Students will be evaluated weekly on occupational skill performance using rubrics. In addition, students will be evaluated daily on work ethics. Progress is measured by test performance, task completion and work ethic.
- Read and study textbooks and technical manuals. Most textbooks & manuals are written at a 12th – 13th grade reading level.
- Complete homework on time. Homework typically involves chapter or workbook assignments, on line research assignments and writing assignments.
- Purchase appropriate work and safety attire, tools, and equipment.

Program Planning Tool

CTE Requirements	Present Educational Ability/Level	Support Needs
<p>Program Completion – Strong self-determination skills and understanding of personal strengths and weaknesses. Ability to meet industry established standards of performance, complete the program of study without curriculum modifications, and earn industry certifications without testing accommodations.</p>		
<p>Reading & Language Arts Level- Text and manuals written on a 12th-13th grade reading level. Proficient on end-of-course exam (Keystone). Effective communication skills in reading and writing and speaking so self and others can clearly understand. Ability to read drawings, specifications and blueprints to prepare patterns and layouts.</p>		
<p>Math Level - At grade level and proficient on end-of-course exam (Keystone). Knowledge of arithmetic, algebra, geometry and their applications. Ability to apply construction geometry; calculate board and square feet; convert fractions, decimals, and percents; simple measurements. Ability to do precise measuring and dimensioning according to blueprints and drawings. Ability to use math to solve problems.</p>		
<p>Aptitude – Mechanical, active listening, complex problem solving/trouble shooting, critical thinking, mathematical reasoning, inductive reasoning, spatial relations. CAD software and computer estimation software.</p>		
<p>Safety & Physical – Arm / hand steadiness, hand-eye coordination, fine motor skills, quick reaction time, near vision, multi-limb coordination, trunk strength, oral comprehension and expression. Ability to stand for long periods of time. High degree of self-discipline and focus needed for safety around moving equipment, hand tools, power tools and other equipment found in the industry. Physical strength and stamina with the ability to lift 50 lbs. overhead. Good eye/hand coordination, stamina to stand for long periods of time.</p>		
<p>Interpersonal/ Social – The ability to work independently or as part of a team. The ability to talk with, listen to and satisfy a customer’s needs.</p>		
<p>Other Occupational/Program Considerations – Self-discipline a must due to safety issues. Learning and work environment includes various chemical, odors, dust, dirt and debris, loud and sometime startling noises, and ongoing background noise.</p>		

Scope and Sequence Engineering & Automation Technology 15.0403

Academic Subjects – Career success and postsecondary education success require the same level of college prep coursework. The Pennsylvania Department of Education’s (PDE) focus is to ensure that every student is prepared for college and a career. Academic courses such as applied math or general science cannot be listed on the program’s scope and sequence. PDE’s goal is to have all students perform at the competent or advanced level on the PSSA, and earn the Pennsylvania Skills Certificate on the end-of-program assessment.

Subject (Hours)	Secondary School				Postsecondary Institution			
	Grade 9 (Hours)	Grade 10 (Hours)	Grade 11 (Hours)	Grade 12 (Hours)	First Semester	Second Semester	Third Semester	Fourth Semester
Technical		Demo Knowledge of Tech Reports	Direct Current (DC) Motors	Mechanical Power Transmission System Industry				
		Demo Safety in the Lab	Alternating Current (AC) Motors	Troubleshoot & Repair Mechanical Power Trans Syst				
		Interpret Elec Symbolism Blueprints & Schematics	Electrical Motor Controls	Fluid Power Systems				
		Dem Know of Basic Elec & use Nat Elec Code (NEC)	Basic Logic Functions	Robotics / Rotation Electrical Machines				
		Measure Components of Electric Systems	Programmable Logic Controls	Job Seeking/Keeping Skills				
		Intro to Shop Machinery	Job Seeking/Keeping Skills					
		Industrial Mechanics						
		Job Seeking/Keeping Skills						
English	College Prep English 9	College Prep English 10	College Prep English 11	College Prep English 12				
Math	Algebra I	Geometry	Algebra II	Trigonometry				
Science	Accl Integrated Science	Biology	Chemistry	Physics				
Humanities	Citizenship	World Cultures	American History I	American Government				
Other	Physical Education	Physical Education	Physical Education	Physical Education				
	Health	Health	Driver's Ed Theory					

CAREER & TECHNICAL STUDENT ORGANIZATIONS (CTSO)

All students enrolled in Reading Muhlenberg Career & Technology Center have the opportunity to participate in at least one Career & Technical Student Organization (CTSO) while enrolled at the CTC. Students who become members in these co-curricular organizations have the opportunity to participate in team building, leadership, community service and social events.

Students also have the opportunity to attend skill competitions where the skills they have learned are "put to the test" against other competitors. These competitions include testing of knowledge and hands-on skills in a variety of trade and leadership events. Students who are fortunate enough to win their events at a district or state competition are able to compete at the national level and travel to locations such as Louisville, KY, Kansas City, MO, San Diego, CA, Orlando, FL, and Cleveland, OH.

SkillsUSA



<http://skillsusa.org>

SkillsUSA is a national organization of students, teachers and industry representatives who are working together to prepare students for careers in technical, skilled and service occupations. SkillsUSA provides quality education experiences for students in leadership, teamwork, citizenship and character development. It builds and reinforces self-confidence, work attitudes and communications skills. It emphasizes total quality at work, high ethical standards, superior work skills, life-long education, and pride in the dignity of work. SkillsUSA also promotes understanding of the free-enterprise system and involvement in community service.

National Technical Honor Society (NTHS)



www.nths.org

NTHS is the acknowledged leader in the recognition of outstanding student achievement in career and technical education. Over 2000 schools and colleges throughout the U.S. and its territories are affiliated with the NTHS. Member schools agree that NTHS encourages higher scholastic achievement, cultivates a desire for personal excellence, and helps top students find success in today's highly competitive workplace.

NTHS members receive: the NTHS membership certificate, pin, card, window decal, white tassel, official NTHS diploma seal, and three personal letters of recommendation for employment, college admission, or scholarships. Students will have access to our online career center including these valuable services: MonsterTRAK, Wells Fargo, Career Safe, and Career Key.

Certificate of Competence

*Awarded
May 26, 2015*

This is to verify that

Has met the standards of competence in the

Curriculum by completing the following job title(s)

Herald P. Witmer Jr.

Director

Teacher