



[www.rmctc.org](http://www.rmctc.org)

## **The Electrical Technology Program**

**CIP 46.0399**

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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

# ELECTRICAL TECHNOLOGY – ELT

- Design and construct electrical systems in homes and businesses.
- Develop the skills and knowledge needed to build electrical systems.
- Successfully transition into a 1<sup>st</sup> career job and/or related post-secondary training.
- Interact with local electrical industry experts.



## **Job Titles – Career Pathways**

- 41-2031 Retail Salespersons
- 47-2111 Electricians
- 47-3013 Helpers -- Electricians
- 49-9098 Helpers – Installation, Maintenance, and Repair Workers

## **CTC knowledge transfers to college credits at:**

Harrisburg Area Community College  
Lincoln Technical Institute  
Orleans Technical Institute  
Penn College of Technology  
Rosedale Technical Institute  
Triangle Technology

## **Student Certifications**

NOCTI – National Occupational Competency Testing Institute Certification  
\* Electrical Power & Transmission Installers  
OSHA Safety Certification  
PBA - Pennsylvania Builders Association

## **Accreditations**

PBA - Pennsylvania Builders Association



# **INSTRUCTOR - Mr. Chad Heffner**

## **Biography**

I am a graduate of Reading High School and Reading Muhlenberg Vo-Tech. I entered the electrical trade because it is an ever-expanding industry with many different career paths. I decided to enter the teaching profession because I wanted to pass along the knowledge I've attained through my 15 years in the electrical field to high school students. Students can realize these skills and knowledge and some of the opportunities available to them in the electrical industry.

## **Education**

IBEW Local 743 Apprentice Program  
Vocational Education I Teaching Certificate

## **Certifications & Awards**

NECA/IBEW Apprenticeship  
OSHA 30-hour training

## **Work Experience**

15 years residential, commercial and industrial

**Hire Date** 2011

## **Community Service**

Home Builders Association

Dear Parent/Guardian,

In order to participate safely in the Electrical Technologies Program, your son/daughter will be required to have the following items:

1. **Work boots with rubber soles** – These will be required to do the hands-on projects in the shop area. Sandals and open toed shoes are prohibited in the shop area.
2. **Proper work attire** – It is strongly recommended that each student wear cotton pants and a cotton sleeved shirt while working in the shop area. A change of clothes can be kept in your child’s locker in the shop.
3. **A pencil** is required every day for theory lessons.

Your son/daughter will be required to operate various hand and power tools in the electrical shop. Each student will be given instruction on the proper operation and safety requirements for each tool. The student will then have to perform and demonstrate the correct operation while under the instructor’s supervision. Until the instruction and safe operation of a tool is complete, the student will not be permitted to operate that particular piece of equipment.

The Electrical Technologies Program is an area of potential hazard if the students do not adhere to the safety guidelines that have been put in place. For the safety of all students, any student who violates school or classroom rules/regulations may not be allowed to participate in hands-on projects. Instead, he/she will be assigned bookwork activities in addition to any other penalties which may apply.

Regarding safety, other than to test a student’s hands-on project, there is absolutely no reason your son/daughter should be exposed to energized circuits while in the electrical shop. The student’s projects will be energized and verified only while under the instructor’s direct supervision. Failure to adhere to this policy will result in the appropriate disciplinary action.

Each student’s safety is my number one priority in the electrical shop. I have included a list of shop rules for you to go over with your child. This list will also be posted in the shop. To ensure that you have read and understand the safety guidelines and shop rules, please sign and return these two forms to the school.

Sincerely,  
 Chad Heffner  
 Electrical Technologies Instructor  
 Reading Muhlenberg CTC

\_\_\_\_\_  
 Parent’s Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Student’s Signature

\_\_\_\_\_  
 Date

# Electrical Technologies Shop Rules

1. No horseplay.
2. Do not throw anything.
3. Do not leave the shop without permission.
4. Be respectful to others.
5. Cleaning up is everyone's responsibility.
6. Electronic devices must be put away at all times (cell phones, iPods, mp3 players, etc.)
7. Teacher dismisses the students, not the bell.
8. Personal Protective Equipment (PPE) must be worn in the shop area at all times.

\_\_\_\_\_  
Parent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

## 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](http://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](http://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: Electrical & Power Transmission Installers, Other CIP Code: 460399

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).

- Electricians
Helpers - - Electricians
Helpers--Installation, Maintenance, and Repair Workers
Program of Study - SOAR
Retail Salespersons

\*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

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.

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.

**46.0399 Electrical & Power Transmission Installers, Other**  
**Electrical Technology**

***Orientation & Safety***

Identify program rules, goals, and procedures.  
Identify & describe electrical occupations.  
Identify job site hazards and demonstrate electrical safety.

***Hand Tools***

Recognize, identify & safely use common electrical hand tools.  
Identify & safely use hydraulic tool system.

***Power Tools***

Identify and safely use various electric drills.  
Identify and safely use various electric saws.  
Identify the use of a portable power conduit threading machine.

***Hardware & Boxes***

Identify and install anchors & supports.  
Identify various boxes and brackets.

***Cable Installation***

Identify types and sizes of cable.  
Identify rough-in requirements and install cable in studs and boxes.

***Switch and Receptacle Circuits***

Install a receptacle circuit.  
Install various switching circuits.

Install a GFCI receptacle.

Install a photo cell and timer circuit.

***Fixtures***

Install various lighting fixtures.

***Wired Devices***

Install a door bell system.  
Install a hard wired smoke detector.

***Testing Equipment***

Identify and safely use various meters and testers.

***Raceways***

Identify and install various raceways.  
Demonstrate the five bends used for conduit raceways.  
Demonstrate how to thread and install RMC/IMC.

***Blue Print Reading***

Identify and interpret blue print plans and symbols.  
Incorporate electrical details to residential blueprint.

***Electrical Service***

Identify and install various overhead services.  
Identify and install various underground services.  
Dress and tie in a service panel.

***Residential Cabling Technology***

Layout and install a low voltage circuit.  
Identify and install coaxial cable for television and telecommunications.

***Electrical Principles***

Comprehend and interpret Ohm's Law.  
Comprehend series, parallel, and combination circuits.  
Demonstrate the application of construction math problems.

***National Electrical Code***

Identify the purpose of the NEC and why it is needed in the industry.  
Demonstrate how to use the NEC as a reference to questions.

***Green Technology***

Describe and explain the uses of wind and solar power.  
Demonstrate knowledge of installation procedures for wind turbine and photovoltaic systems.

***Basic Motor Control***

Interpret basic motor control schematic and ladder diagrams.  
Draw a diagram and wire a basic control circuit.  
Draw a diagram and wire single and multiple start-stop stations.

***OSHA***

Complete OSHA training.

***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.

# 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:**
    - 1<sup>ST</sup> violation – VERBAL WARNING**
    - 2<sup>nd</sup> 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.

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STUDENT SIGNATURE

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PARENT/GUARDIAN SIGNATURE



# **Articulation Agreements**

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

Harrisburg Area Community College

Lincoln Technical Institute

Orleans Technical Institute

Penn College of Technology

Rosedale Technical Institute

Triangle Technology

# 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](http://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 46.0399 ELECTRICAL 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: Pennsylvania Builders Association and OSHA Certifications.
- 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. Students will be required to use tools such as cable reels, screwdrivers, conduit benders, crimping tools, power drills, stripping tools, voltage and current meters, wire and cable cutters.
- Students will be required to climb ladders and work from scaffolding. Working in the laboratory, students will also be required to learn the safe installation of switches, conduit, controls, circuit breakers, wires, lights, signal devices and other electrical parts. Due to the risk of electrical shock and fire hazard, using this equipment requires self-discipline and strict adherence to rules to ensure safety of self and others. The laboratory simulates a real working environment therefore students will be exposed to the noise levels, dust, debris, and fumes associated with the electrical occupations profession.
- Participate in classroom theory and laboratory applications for generally 2 ½ hours each day; students will spend 50% of their time in classroom theory and 50% of their time doing laboratory applications and live work.
- Participate in Career & Technical Student Organizations including HBA, 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 are written at a 11th to 12th grade reading level and most technical manuals are written at a higher level and are accessed on line.
- 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. Glasses - \$8; Start-up tools - \$150.

## Program Planning Tool

CTE Requirements	Present Educational Ability/Level	Support Needs
<p><b>Program Completion</b> – 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><b>Reading &amp; Language Arts Level</b>- Text and manuals written on a 11<sup>th</sup>-12<sup>th</sup> grade reading level. Proficient on end-of-course exam (Keystone). Understanding written sentences and paragraphs in work related documents. Ability to read and comprehend blueprints, technical drawings, and measuring instruments.</p>		
<p><b>Math Level</b> - At grade level and proficient on end-of-course exam (Keystone). Knowledge of arithmetic, algebra, geometry and their applications. Ability to estimate and measure sizes, distances, and quantities; and determine time, costs, resources, or materials needed to perform a work activity. Ability to calculate and use electrical mathematical concepts and properties.</p>		
<p><b>Aptitude</b> – Mechanical, critical thinking, active listening, complex problem solving, troubleshooting, deductive reasoning, inductive reasoning, selective attention (ability to concentrate on a task over a period of time without being distracted), visual color discrimination and spatial relations.</p>		
<p><b>Safety &amp; Physical</b> – Manual dexterity, multi-limb coordination while standing, sitting or lying down, arm-hand steadiness and finger dexterity. General body coordination and stamina that requires considerable use of arms, legs and whole body. 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. Ability to work in all weather conditions, work independently, have good eye/hand coordination, color discrimination, no fear of heights or working in closed spaces.</p>		
<p><b>Interpersonal/ Social</b> – Dependability, cooperation, integrity, initiative, independence, stress tolerance. Ability to work independently and in a team.</p>		
<p><b>Other Occupational/Program Considerations</b> - Teamwork, excellent measuring skills, Dust, dirt and debris, loud and sometime startling noises, ongoing background noise, moving people and construction equipment, small spaces, interior or exterior work factors/environmental factors, scaffolding and ladders. Due to the risk of electrical shock and fire hazards, using this equipment requires self-discipline and strict adherence to rules to ensure safety of self and others.</p>		

# Scope and Sequence Electrical Technology 46.0399



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		Orientation & Safety	Power Tools	Raceways	ELT 111: Direct Current Fundamentals	ELT 120: Construction Lab II - Commercial	ELT 234: Electrical Motor Control	ELT 244: Advanced Electrical Theory
		Hand & Power Tools	Switch & Receptacle Circuits	Electrical Service	ELT 113: Accident Prevention	ELT 122: Alternating Current Fundamentals	ELT 235: Industrial Electronics	ELT 245: Intro to Programming Logic Control
		Hardware, Boxes & Cable Installation	Fixtures & Wired Devices	Residential Cabling Technology	ELT 116: Construction Lab I - Residential	EDT 120: Electrical Drawing and Print Reading		ELT 248: Electrical Systems Analysis
		Switch & Receptacle Circuits	Testing Equipment	Green Technology				ELT 249: Programmable Logic Control Input/Output
		Blueprint Reading & Electrical Code	Raceways	Basic Motor Control				
		Electrical Principles	Blueprint Reading	OSHA				
		Job Seeking/Keeping Skills	Electrical Service	Job Seeking/Keeping Skills				
			Job Seeking/Keeping Skills					
English	College Prep English 9	College Prep English 10	College Prep English 11	College Prep English 12	ENL 111: English Comp I		ENL 121: English Comp II	
							ENL 201: Technical & Professional Communication	
Math	Algebra I	Algebra II	Geometry	Trigonometry	MTH 180: College Algebra and Trig I	MTH 182: College Algebra and Trig II		
Science	Accl Integrated Science	Biology	Chemistry				PHS 114: Physics w/Technological Applications	
Humanities	Citizenship	World Cultures	American History I	American Government				_SSE: Elective Social Science
Other	Physical Education	Physical Education	Physical Education	Physical Education			FIT: Elective: Fitness	
	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.

### **Home Builders of America (HBA)**



<http://www.pabuilders.org/>

The purpose of the HBA Student Chapter Program is to give students first hand exposure to the "real world" of the building industry and an invaluable complement to their academic studies.

### **National Technical Honor Society (NTHS)**



[www.nths.org](http://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)*

SAMPLE

*Herald P. Witmer Jr.*

Director

Teacher