



September 11, 2017

Dear Regina Hiler,

RE: Letter of Support – PDE

As an employer in the Butler County Area, I am writing this letter of support for the Butler County Area Vocational-Technical School. The Butler County Area Vocational-Technical School is a learning facility that offers courses to students designed to meet the needs of the students as well as the occupational requirements in the labor market. The Butler County Area Vocational-Technical School empowers students with skills necessary for continuous development, education and employment.

The Program of Study CIP Code 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician at the Butler County Area Vocational-Technical School prepares graduates to be qualified employees, meets our needs within industry, as well as the needs of the community.

I encourage and support the approval of Program of Study for CIP Code 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician.

 _____
Signature

09-11-17
_____ Date

NAME: Quinn A. Hepler TITLE: Commercial Contract Estimator/Manager

BUSINESS NAME Tudi Mechanical Systems

ADDRESS: 343 Munson Avenue, McKees Rocks, PA 15136



**JOURNEYMAN • APPRENTICE TRAINING FUND
FOR THE SHEET METAL INDUSTRY
OF WESTERN PENNSYLVANIA**

1200 GULF LAB ROAD • PITTSBURGH, PA 15238 • PHONE 412-828-1386



September 7, 2017

Dear Regina Hiler,

RE: Letter of Support – PDE

As a State Approved Apprenticeship program and representing SMACNA contractors covering the Butler County Area, I am writing this letter of support for the Butler County Area Vocational-Technical School. The Butler County Area Vocational-Technical School is a learning facility that offers courses to students designed to meet the needs of the students as well as the occupational requirements in the labor market. The Butler County Area Vocational-Technical School empowers students with skills necessary for continuous development, education and employment.

The Program of Study CIP Code 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician at the Butler County Area Vocational-Technical School prepares graduates to be qualified employees, meets our needs within industry, as well as the needs of the community.

I encourage and support the approval of Program of Study for CIP Code 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician. Our program has benefitted from the program at BCAVTS by far this is one of the top rated Vo- Tech or CTC in the state.



Signature



Date

NAME: Keith Schettler

TITLE: Apprenticeship Coordinator

BUSINESS NAME L12 Training Center (Sheet Metal Workers Local 12)

ADDRESS: 1200 Gulf Lab Road Pittsburgh, PA 15238



**CAREER AND TECHNICAL EDUCATION INFORMATION SYSTEM
PENNSYLVANIA DEPARTMENT OF EDUCATION
SCOPE AND SEQUENCE
FOR SCHOOL YEAR 2017-2018**

DATE : 10/31/2017

Articulation Agreement between Butler County AVTS

and Butler County Community Coll (404100852)

Secondary School Name : Butler County AVTS

AUN: 104101307

CIP Code Number and Title : 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician

Program Type: Program of Study

Secondary School					Postsecondary Institution			
Subject (Hours)	Grade 9 (Hours)	Grade 10 (Hours)	Grade 11 (Hours)	Grade12 (Hours)	First Semester	Second Semester	Third Semester	Fourth Semester
Technical (1086)		Intro. to HVAC & Safety I(75)	Intro. to HVAC & Safety II(75)	HVACR Math Skills(45)	DRFT 114 Blueprint Reading	TECH 120 Load Calculations	TECH 220 HVAC System Design	NOCTI, ICE, EPA 608 Certification
		Tools & Blueprint Reading I(30)	Tools & Blueprint Reading II(30)	Advanced Heating, Cooling, Air Distr. Systems (85)		DRFT 220 Intro to CACC	ELEC 110 Electrical Fundamentals	ELEC 225 Digital Electronics
		Computer Fundamentals and Math Skills I(45)	Computer Fundamentals and Math Skills II (45)	Hydronic Systems(30)				
		Piping I(35)	Piping II(35)	Install.Heat Pumps&Green Tech HVACR Systems(45)				
		Electricity I(60)	Electricity II(60)	Use and Safety of Refrigerants (35)				
		Air Systems I(40)	Air Systems II (40)	Gas Heating Systems(30)				
		Cooling and Refrigeration Components & Systems I(4)	Cooling and Refrigeration Components & Systems II(System and Component Troubleshooting (65)				
		Heating Components & Systems I(37)	Heating Components & Systems II(37)	Employment Skills(27)				
English	College Prep I	College Prep II	College Prep III	College Prep IV	ENGL 101 English I	COMM 201 Speech		
Math	Algebra I	Algebra II	Geometry	Recommended College Prep Math	MATH 117 Technical Math I			
Science	Biology I	Chemistry I with Lab	Physics	Recommended College Prep Technical Science		COMP 210 Intro to Microcomputing		
						PHYS 101 Physics I		



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Science								
Humanities	Civics	US History	World History	Government	Elective			
Other	Recommended Foreign Language I	Recommended Foreign Language II		Recommended Cooperative Education	BUSN 203 Intro to Business		PHED 125 Physical Wellness	
	Recommended Computer Technology	Recommended Computer Technology	Recommended Computer Technology	Recommended Computer Technology			BUSN Elective	
	Recommended Industrial Technology	Recommended Industrial Technology	Recommended Industrial Technology	Recommended Industrial Technology				
	Recommended STEM Coursework	Recommended STEM Coursework	Recommended STEM Coursework	Recommended STEM Coursework				

Subject	Dual Enrollment Credits			Articulated Credits		
	Course Number	Course Description	Credit Hours	Course Number	Course Description	Credit Hours
Technical				NOCTI,ICE, EPA 608	NOCTI, ICE, EPA 608	12.0
English						
Math						
Science						



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CIP Code Number and Title : 47.0201 Heating, Air Conditioning,
Ventilation and Refrigeration
Maintenance Technology/Technician

Program Type: Program of Study

Subject	Dual Enrollment Credits			Articulated Credits		
	Course Number	Course Description	Credit Hours	Course Number	Course Description	Credit Hours
Science						
Humanities						
Other						

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017, and 2018</u></p> <p style="text-align: center;">Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician CIP 47.0201 Task Grid</p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
Secondary Competency Task List		
100	INTRODUCTION TO HVAC	
101	Identify HVAC systems.	
102	Describe career opportunities in the HVAC profession.	
103	Demonstrate awareness of the occupational requirements.	
104	Explain the class rules and the rational behind them.	
200	BASIC SAFETY	
201	Identify causes of job site accidents and measures to prevent them from occurring.	
202	Identify job site hazards and describe measures to prevent them from occurring.	
203	Identify and demonstrate the use of personal protection equipment.	
204	Demonstrate the knowledge of OSHA regulations.	
300	TOOLS FOR HVAC/R	
301	Identify and safely use basic hand tools used in the trade.	
302	Identify and safely use basic power tools used in the trade.	
400	BLUEPRINT READING	
401	Identify types of blueprint plans.	
402	Read and interpret blueprint plans.	
500	PIPING PRACTICES	
501	Identify piping materials.	

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017, and 2018</u></p> <p style="text-align: center;">Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician CIP 47.0201 Task Grid</p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
502	Select, measure, cut, and ream piping and tubing.	
503	Assemble piping projects and pressure test according to trade standards.	
504	Identify and assemble PVC pipe and fittings.	
505	Assemble copper tubing projects and pressure test according to trade standards.	
506	Solder copper tubing.	
507	Braze ACR tubing.	
508	Identify and demonstrate proper use of fittings and tools for steel (black) pipe.	
509	Cut, ream, thread and assemble steel (black) pipe.	
510	Assemble corrugated stainless steel gas tubing (CSST) projects.	
511	Identify piping material such as PVC, ABS, copper, black iron.	
600	BASIC ELECTRICITY	
601	Describe methods of producing electricity using appropriate terms.	
602	Calculate basic electrical quantities using Ohm's law.	
603	Explain how magnetism is used in different HVAC components.	
604	Identify safe electrical practices.	
605	Identify and draw various types of electrical schematics and symbols.	
606	Demonstrate proper wiring techniques.	
607	Demonstrate electrical testing to include mechanical/electronic relays.	
608	Wire series circuit, parallel circuit, and series / parallel circuit.	
609	Install electric disconnects, circuit breakers and fuses.	
610	Identify and test capacitors.	
611	Identify electrical motors and their applications.	
612	Identify motor control protection and start devices.	

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017, and 2018</u></p> <p style="text-align: center;">Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician CIP 47.0201 Task Grid</p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
613	Identify electrical codes.	
614	Demonstrate knowledge of transformers and their applications.	
700	INTRODUCTION TO COOLING	
701	Measure temperature and pressure of a cooling system.	
702	Calculate superheat and subcooling.	
703	Locate and describe components of the basic refrigeration cycle.	
704	Apply pressure temperature charts for various refrigerants.	
705	Describe the functions of compressors.	
706	Describe the functions of condensers.	
707	Describe the functions of evaporators.	
708	Describe the functions of metering devices.	
709	Identify secondary components used in the air conditioning and refrigeration industry.	
710	Evaluate effects of airflow on system performance.	
800	INTRODUCTION TO HEATING	
801	Describe the principles of combustion.	
802	Identify temperatures and pressures of a heating system.	
803	Identify components of various heating systems.	
804	Perform maintenance on a gas furnace.	
805	Troubleshoot conventional / condensing gas heating equipment.	
806	Identify oil heating equipment.	
807	Install and adjust oil fired equipment.	
808	Perform annual preventive maintenance on oil fired equipment.	

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017, and 2018</u></p> <p style="text-align: center;">Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician CIP 47.0201 Task Grid</p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
809	Troubleshoot oil fired equipment.	
810	Identify electric heating equipment.	
811	Install heating/air conditioning thermostats according to manufacturer's standards.	
812	RESERVED	
813	Perform combustion analysis on oil and gas fired equipment.	
900	AIR DISTRIBUTION SYSTEMS	
901	Identify and sketch different types of duct systems.	
902	Identify and describe the different types of duct system components.	
903	Test velocity, temperature, humidity, and volume in a duct system.	
904	RESERVED	
905	RESERVED	
906	Perform basic duct fabrication functions.	
1000	INTRODUCTION TO HYDRONIC SYSTEMS	
1001	Describe hot water heating system components.	
1002	Install and service hydronic systems.	
1100	LEAK DETECTION, EVACUATION, RECOVERY AND CHARGING	
1101	Locate refrigerant leaks using common types of leak detectors.	
1102	Perform refrigerant recovery.	
1103	Perform system evacuation and dehydration.	
1104	Determine when to charge with liquid versus vapor.	
1105	Weigh in correct system charge (when appropriate).	

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017, and 2018</u></p> <p style="text-align: center;">Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician CIP 47.0201 Task Grid</p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
1106	Charge systems using superheat method when appropriate (e.g., fixed restriction).	
1107	Charge systems using subcooling method when appropriate (e.g., TXV, AXV).	
1108	Demonstrate knowledge of EPA Section 608.	
1200	TROUBLESHOOTING GAS HEATING	
1201	Perform gas burner flame proving tests according to trade standards.	
1202	Demonstrate how to install, trouble shoot, and service gas heating equipment.	
1300	TROUBLESHOOTING COOLING	
1301	Identify control system components.	
1302	Demonstrate, install, trouble shoot, and service cooling equipment.	
1303	Demonstrate how to install electrical components.	
1400	HEAT PUMPS	
1401	Explain heat pump modes of operation.	
1402	Identify and describe heat pump components.	
1403	Demonstrate how to install heat pumps.	
1500	COMPUTER FUNDAMENTALS	
1501	RESERVED	
1502	Utilize the Internet for research.	
1503	Identify and demonstrate skills with computer software relating to HVAC.	

Heating, Air Conditioning, Ventilation, and Refrigeration Maintenance Technology/Technician, Classification of Instructional Program (CIP) 47.0201

Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

100 Introduction to HVAC

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>101 Identify HVAC systems. 102 Describe career opportunities in the HVAC profession. 103 Demonstrate awareness of the occupational requirements. 104 Explain the class rules and the rationale behind them.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most</p>	

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem. Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.</p> <p>RANGE OF READING GRADES 9-</p>	<p>significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem. Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</p> <p>RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

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		10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J By the end of grades 9- 10, AND 11- 12, read and comprehend technical texts independently and proficiently.		

200 Basic Safety

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>201 Identify causes of job site accidents and measures to prevent them from occurring.</p> <p>202 Identify job site hazards and describe measures to prevent them from occurring.</p> <p>203 Identify and demonstrate the use of personal protection equipment.</p> <p>204 Demonstrate the knowledge of OSHA regulations.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
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300 Tools for HVAC/R

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<p>301 Identify and safely use basic hand tools used in the trade.</p> <p>302 Identify and safely use basic power tools used in the trade.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	

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400 Blueprint Reading

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>401 Identify types of blueprint plans. 402 Read and interpret blueprint plans.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author’s purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to Geometric figures. Standard 2.3.HS.A.13 Analyze relationships between two dimensional</p>

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500 Piping Practices

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>501 Identify piping materials.</p> <p>502 Select, measure, cut, and ream piping and tubing.</p> <p>503 Assemble piping projects and pressure test according to trade standards.</p> <p>504 Identify and assemble PVC pipe and fittings.</p> <p>505 Assemble copper tubing projects and pressure test according to trade standards.</p> <p>506 Solder copper tubing.</p> <p>507 Braze ACR tubing.</p> <p>508 Identify and demonstrate proper use of fittings and tools for steel (black) pipe.</p> <p>509 Cut, ream, thread and assemble steel (black) pipe.</p> <p>510 Assemble corrugated stainless steel gas tubing (CSST) projects.</p> <p>511 Identify piping material such as PVC, ABS, copper, and black iron.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to Geometric figures. Standard 2.3.HS.A.13 Analyze relationships between two dimensional and three dimensional</p>

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600 Basic Electricity

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>601 Describe methods of producing electricity using appropriate terms.</p> <p>602 Calculate basic electrical quantities using Ohm's law.</p> <p>603 Explain how magnetism is used in different HVAC components.</p> <p>604 Identify safe electrical practices.</p> <p>605 Identify and draw various types of electrical schematics and symbols.</p> <p>606 Demonstrate proper wiring techniques.</p> <p>607 Demonstrate electrical testing to include mechanical/electronic relays.</p> <p>608 Wire series circuit, parallel circuit, and series / parallel circuit.</p> <p>609 Install electric disconnects, circuit breakers and fuses.</p> <p>610 Identify and test capacitors.</p> <p>611 Identify electrical motors and their applications.</p> <p>612 Identify motor control protection and start devices.</p> <p>613 Identify electrical codes.</p> <p>614 Demonstrate knowledge of transformers and their applications.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10. B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to Geometric figures. Standard 2.3.HS.A.13 Analyze relationships between two dimensional and three dimensional</p>

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700 Introduction to Cooling

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>701 Measure temperature and pressure of a cooling system.</p> <p>702 Calculate superheat and sub-cooling.</p> <p>703 Locate and describe components of the basic refrigeration cycle.</p> <p>704 Apply pressure temperature charts for various refrigerants.</p> <p>705 Describe the functions of compressors.</p> <p>706 Describe the functions of condensers.</p> <p>707 Describe the functions of evaporators.</p> <p>708 Describe the functions of metering devices.</p> <p>709 Identify secondary components used in the air conditioning and refrigeration industry.</p> <p>710 Evaluate effects of airflow on system performance.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to Geometric figures. Standard 2.3.HS.A.13 Analyze relationships between two dimensional and three dimensional</p>

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800 Introduction to Heating

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>801 Describe the principles of combustion.</p> <p>802 Identify temperatures and pressures of a heating system.</p> <p>803 Identify components of various heating systems.</p> <p>804 Perform maintenance on a gas furnace.</p> <p>805 Troubleshoot conventional / condensing gas heating equipment.</p> <p>806 Identify oil heating equipment.</p> <p>807 Install and adjust oil fired equipment.</p> <p>808 Perform annual preventive maintenance on oil fired equipment.</p> <p>809 Troubleshoot oil fired equipment.</p> <p>810 Identify electric heating equipment.</p> <p>811 Install heating/air conditioning thermostats according to manufacturer's standards.</p> <p>812 RESERVED</p> <p>813 Perform combustion analysis on oil and gas fired equipment.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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900 Air Distribution Systems

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<p>901 Identify and sketch different types of duct systems.</p> <p>902 Identify and describe the different types of duct system components.</p> <p>903 Test velocity, temperature, humidity, and volume in a duct system.</p> <p>904 RESERVED</p> <p>905 RESERVED</p> <p>906 Perform basic duct fabrication functions.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10. B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12. C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10. D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
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1000 Introduction to Hydronic Systems

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>1001 Describe hot water heating system components.</p> <p>1002 Install and service hydronic systems.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10. B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12. C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10. D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p>ALGEBRA Standard 2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p>GEOMETRY Standard 2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles. Standard 2.3.HS.A.3 Verify and apply geometric theorems as they relate to Geometric figures. Standard 2.3.HS.A.13 Analyze relationships between two dimensional and three dimensional objects.</p>

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1100 Leak Detection, Evacuation, Recovery, and Charging

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>1101 Locate refrigerant leaks using common types of leak detectors.</p> <p>1102 Perform refrigerant recovery.</p> <p>1103 Perform system evacuation and dehydration.</p> <p>1104 Determine when to charge with liquid versus vapor.</p> <p>1105 Weigh in correct system charge (when appropriate).</p> <p>1106 Charge systems using superheat method when appropriate (e.g., fixed restriction).</p> <p>1107 Charge systems using subcooling method when appropriate (e.g., TXV, AXV).</p> <p>1108 Demonstrate knowledge of EPA Section 608.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10. B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12. C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10. D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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1200 Troubleshooting Gas Heating

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<p>1201 Perform gas burner flame proving tests according to trade standards.</p> <p>1202 Demonstrate how to install, trouble shoot, and service gas heating equipment.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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1300 Troubleshooting Cooling

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>1301 Identify control system components.</p> <p>1302 Demonstrate, install, trouble shoot, and service cooling equipment.</p> <p>1303 Demonstrate how to install electrical components.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12. A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart). Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem. Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.</p> <p>RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p>Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</p> <p>RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

1400 Heat Pumps

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>1401 Explain heat pump modes of operation.</p> <p>1402 Identify and describe heat pump components.</p> <p>1403 Demonstrate how to install heat pumps.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	<p>NUMBERS AND OPERATIONS Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems. Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart). Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem. Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.</p> <p>RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p>Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.</p> <p>RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

1500 Computer Fundamentals

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>1501 RESERVED 1502 Utilize the Internet for research. 1503 Identify and demonstrate skills with computer software relating to HVAC.</p>	<p>CAREER CLUSTER Manufacturing Career Cluster (Choose Standards) 1-2-3-4-5-6-7</p> <p>CAREER PATHWAYS INCLUDE: Maintenance, Installation and Repair Career Pathway (Choose Standards) 1-2-3-4-5-6</p> <p>NOTE: Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</p>	<p>KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A Cite specific textual evidence, etc. Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B Determine the central ideas or conclusions of a text; etc. Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.</p> <p>CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words. Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc. Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p>INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into</p>	<p>TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content. Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p>PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience. Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p>RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.</p>	

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
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BUTLER COUNTY AREA VOCATIONAL-TECHNICAL SCHOOL Graduate Follow-Up Study 2015	Total Surveyed	Information Not Available	Total Responses	% of Responses	Employed Related	Employed, Unrelated	Military Service	Pursuing Additional Education	Total Gainfully Placed	% Gainfully Placed	Unemployed, Looking for Work	Unemployed, Not Looking
Air Conditioning/Electrical Occupations	12	1	11	92	9	0	0	1	10	91	1	0
Auto Body/Collision Repair	18	2	16	89	6	6	0	4	16	100	0	0
Automotive Mechanics	20	3	17	85	8	6	0	1	15	88	2	0
Building Construction	15	3	12	80	7	2	0	2	11	92	1	0
Carpentry	6	1	5	83	3	1	0	1	5	100	0	0
Commercial Art	15	3	12	80	0	5	0	7	12	100	0	0
Computer Networking & Tele.	11	2	9	82	0	1	1	7	9	100	0	0
Cosmetology	25	2	23	92	3	5	1	13	22	96	1	0
Culinary Arts	25	2	23	92	3	5	1	12	21	91	2	0
Graphic Arts	26	5	21	81	1	7	1	10	19	90	1	1
Health Assistant	51	10	41	80	5	5	0	25	35	85	4	2
Heavy Equipment	21	3	18	86	8	4	0	5	17	94	0	0
Machine Technology	29	4	25	86	12	7	0	5	24	96	1	0
Protective Services	13	2	11	85	0	5	3	3	11	100	0	0
Welding	27	4	23	85	7	7	3	5	22	96	1	0
TOTALS	314	47	267	85	72	66	10	101	249	93	14	3

Date: February 18, 2016

BUTLER COUNTY AREA VOCATIONAL-TECHNICAL SCHOOL Graduate Follow-Up Study 2016	Total Surveyed	Information Not Available	Total Responses	% of Responses	Employed Related	Employed, Unrelated	Military Service	Pursuing Additional Education	Total Gainfully Placed	% Gainfully Placed	Unemployed, Looking for Work	Unemployed, Not Looking
Air Conditioning/Electrical Occupations	27	2	25	93%	11	6	4	2	23	92%	0	0
Auto Body/Collision Repair	20	0	20	100%	10	3	1	4	18	90%	0	2
Automotive Mechanics	27	2	25	93%	14	4	2	1	21	84%	1	3
Building Construction	20	1	19	95%	7	5	2	4	18	95%	0	0
Carpentry	20	2	18	90%	6	4	1	7	18	100%	0	0
Commercial Art	28	3	25	89%	0	9	1	15	25	100%	0	1
Computer Networking & Tele.	20	2	18	90%	1	1	0	15	17	94%	0	1
Cosmetology	21	2	19	90%	6	3	0	9	18	95%	0	0
Culinary Arts	26	5	21	81%	3	2	0	8	13	62%	1	4
Graphic Arts	26	6	20	77%	1	8	0	9	18	90%	0	2
Health Assistant	50	8	42	84%	9	12	1	20	42	100%	0	0
Heavy Equipment	20	5	15	75%	3	6	0	5	14	93%	0	1
Machine Technology	29	2	27	93%	17	6	0	4	27	100%	0	0
Protective Services	17	3	14	82%	2	3	5	3	13	93%	0	1
Welding	19	1	18	95%	7	3	1	3	14	78%	1	1
TOTALS	370	44	326	88%	97	75	18	109	299	92%	3	16

Date: February 28, 2017

Pennsylvania Secondary Career and Technical Education 4S1 - Student Graduation Rates - By School and Program

Numerator: Number of grade 12 CTE concentrators reported as graduated
(excluding students graduating with GED).

Denominator: Number of grade 12 CTE concentrators who were reported as
graduates or dropouts.

CTE Educating LEA Code	CTE Educating LEA Name	CTE Educating School Number	CTE Educating School	CIP Code	CIP Name	Numerator	Denominator	Ratio
104101307	Butler County AVTS	6999	Butler County AVTS	110901	Computer Network/Telecom	11	11	100.00%
				Business Education	11	11	100.00%	
		6999		510899	Health/Med Assts Other	51	51	100.00%
				Health Occupations Education	51	51	100.00%	
		6999		120508	Institutional Food Worker	25	25	100.00%
				Occupational Home Economics	25	25	100.00%	
		6999		100399	Graphic Communication Oth	26	26	100.00%
		6999		120401	Cosmetology General	22	22	100.00%
		6999		439999	Hmland Secr/Law Enforc Ot	13	13	100.00%
		6999		460201	Carpentry/Carpenter	6	6	100.00%
		6999		469999	Construction Trades Oth	15	15	100.00%
		6999		470201	Heating AC Refrig Mech	12	12	100.00%
		6999		470603	Autobody Repair Tech	18	18	100.00%
		6999		470604	Automotive Mechanic Tech	20	20	100.00%
		6999		470613	Medium/Heavy Vehicle Tech	20	20	100.00%
		6999		480501	Machine Tool Tech	29	29	100.00%
		6999		480508	Welding Technology/Welder	26	26	100.00%
		6999		500402	Commercial/Advertisng Art	15	15	100.00%
				Trade & Industrial Education	222	222	100.00%	
				Butler County AVTS	309	309	100.00%	
				Butler County AVTS	309	309	100.00%	

Pennsylvania Secondary Career and Technical Education
4S1 - Student Graduation Rates - By School and Program

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 Denominator: Number of grade 12 CTE concentrators who were reported as graduates or dropouts.

School Year:

CTE Educating LEA	CTE Educating LEA Code	CTE Educating LEA Name	CTE Educating School Number	CTE Educating School	CIP Cluster	CIP Code	CIP Name	Numerator	Denominator	Ratio
Butler	104101307	Butler County AVTS	6999	Butler County AVTS	Information Technology	110901	Computer Network/Telecom	19	19	100.00%
					Business Education			19	19	100.00%
			6999		Health Science	510899	Health/Med Assts Other	48	48	100.00%
					Health Occupations Education			48	48	100.00%
			6999		Hospitality & Tourism	120508	Institutional Food Worker	23	23	100.00%
					Occupational Home Economics Education			23	23	100.00%
			6999		Arts A/V Technology & Communications	100399	Graphic Communication Oth	23	23	100.00%
			6999		Human Services	120401	Cosmetology General	20	20	100.00%
			6999		Law Public Safety & Security	439999	Hmland Secr/Law Enforc Ot	16	16	100.00%
			6999		Architecture & Construction	460201	Carpentry/Carpenter	18	18	100.00%
			6999		Architecture & Construction	469999	Construction Trades Oth	20	20	100.00%
			6999		Architecture & Construction	470201	Heating AC Refrig Mech	27	27	100.00%
			6999		Transportation Distribution & Logistics	470603	Autobody Repair Tech	18	18	100.00%
			6999		Transportation Distribution & Logistics	470604	Automotive Mechanic Tech	27	27	100.00%
			6999		Transportation Distribution & Logistics	470613	Medium/Heavy Vehicle Tech	17	17	100.00%
			6999		Manufacturing	480501	Machine Tool Tech	30	30	100.00%
			6999		Manufacturing	480508	Welding Technology/Welder	19	19	100.00%
			6999		Arts A/V Technology & Communications	500402	Commercial/Advertisng Art	26	26	100.00%
					Trade & Industrial Education			261	261	100.00%
					Butler County AVTS			351	351	100.00%
					Butler County AVTS			351	351	100.00%

PIMS CTE QC Report 12

CTE Special Population Aggregate Statistical Review

School Year: 2014 - 2015

CIP Totals

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	1 Disabled (with IEP)	13	13	0	0	3	7	3	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	2 Section 504 Students	2	2	0	0	0	2	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	3 Economically Disadvantaged	12	11	1	0	2	6	4	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	8 Nontraditional Enrollees	1	0	1	0	0	0	1	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	10 Special Population Unduplicated Total	20	19	1	0	3	13	4	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	11 Non-Special Population	24	24	0	0	0	14	10	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	12 Total	44	43	1	0	3	27	14	0	0

PIMS CTE QC Report 12

CTE Special Population Aggregate Statistical Review

School Year: 2015 - 2016

CIP Totals

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	1 Disabled (with IEP)	16	15	1	0	3	5	8	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	2 Section 504 Students	3	3	0	0	0	1	2	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	3 Economically Disadvantaged	15	15	0	0	2	8	5	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	8 Nontraditional Enrollees	1	0	1	0	1	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	10 Special Population Unduplicated Total	28	27	1	0	5	11	12	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	11 Non-Special Population	48	48	0	0	5	23	20	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	12 Total	76	75	1	0	10	34	32	0	0

PIMS CTE QC Report 12

CTE Special Population Aggregate Statistical Review

School Year: 2016 - 2017

CIP Totals

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	1 Disabled (with IEP)	13	12	1	0	3	6	4	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	2 Section 504 Students	1	1	0	0	0	0	1	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	3 Economically Disadvantaged	23	23	0	0	7	10	6	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	8 Nontraditional Enrollees	2	0	2	0	0	1	1	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	10 Special Population Unduplicated Total	31	29	2	0	7	15	9	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	11 Non-Special Population	40	40	0	0	6	13	21	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	470201	Heating AC Refrig Mech	12 Total	71	69	2	0	13	28	30	0	0



Row of ten dark blue polo shirts hanging on a rack, each with a gold medal.

SOLENOID VALVES

THERMOSTATIC EXPANSION VALVES

Carrier

HEAT PUMP