

## **Advisory Committee Minutes Fall 2019**

### **HVAC**

Vernon College – Skills Training Center  
Thursday, November 14, 2019 at 12:00pm

Bin Ellett - Chair  
Chris Johns - Vice Chair  
Robb Havens - Recorder

#### **Members Present:**

Zack Cole, Sporline/Parker  
Bin Ellett, Ellett Air Conditioning  
Ryan Ellett, Ellett Air Conditioning  
Robb Havens, James Lane Heating and Air  
Chris Johns, Mike Graham Heating, Air and Plumbing  
Lou Lucero, Vernon College/Lab Assistant  
Cindy McCloud, Texoma Heating and Air

#### **Staff and Faculty Present:**

Shana Drury  
Chelsey Henry  
Scott McClure  
Holly Scheller  
Mollie Williams

#### **Members Not Present:**

Eddie Johnson  
Ritchie Lee

*Bin Ellett asked if there anything the faculty, Scott McClure, would like to add to the information below from old business.*

#### **Stanley and Betty Ray scholarship – no one applied**

#### **Epa exam – Spring, 2018**

- **Core – 12 of 17 passed**
- **Type 1 – 11 of 17 passed**
- **Type 2 – 9 of 17 passed**
- **Type 3 – 6 of 17 passed**
- **Universal – 6**
- **Universal – 7 after retest**

**Review program outcomes, assessment methods/results, and workplace competency.**

#### **Approve program outcomes:**

*Bin Ellett asked the committee to review the program outcomes listed below. He asked the faculty member, Scott McClure, to briefly review these.*

1. Analyze airflow, refrigerant flow, and electron flow to evaluate the operating efficiency of air conditioning systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.
2. Analyze airflow, refrigerant flow and electron flow to evaluate the operating efficiency of heat pumps; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.

3. Analyze airflow, gas flow and electrical flow to evaluate the operating efficiency of gas fired heating systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.
4. Evaluate the installation of air conditioning and heating units and associated ductwork as well as understand unit loads for optimum efficiency.
5. Recover charge and vacuum refrigeration systems to proper levels.
6. Understand and apply current laws and procedures associated with section 608 of the Clean Air Act.

*Discuss on whether to drop the number 6 outcome which uses passing of the EPA exam to prove competency. Number six is more of a specific course objective than a program outcome.*

*Robb Havens made a motion to approve program outcomes 1 through 5 removing outcome number 6.*

*Chris Johns seconded the motion.*

*The motion passed to approve program outcomes 1-5 and remove outcome 6.*

**Approve assessment methods and results:**

*Bin Ellett asked the faculty member, Scott McClure, to explain in more detail the assessment methods and results.*

Scott explained:

Students are assessed over classroom theory by mid-terms, finals, and pop quizzes. Students are assessed over lab work by completing the labs required, filling out data observed on lab on the equipment and writing the data down on competencies used from the lab book, answering questions posed by the instructor while with the equipment, and defining sequence of operation, and finally by reviews back in the classroom over applying theory to practical applications performed in the lab.

1. Analyze airflow, refrigerant flow, and electron flow to evaluate the operating efficiency of air conditioning systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.
  - a. Lab competency to be followed is – comp 1-a, air conditioner system performance worksheet.
2. Analyze airflow, refrigerant flow and electron flow to evaluate the operating efficiency of heat pumps; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.
  - a. Lab competency to be followed is – comp 1-a, air conditioner system performance worksheet.
3. Analyze airflow, gas flow and electrical flow to evaluate the operating efficiency of gas fired heating systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.
  - a. Lab competency to be followed is – lab 1-b, gas furnace jobsite information sheet.

4. Evaluate the installation of air conditioning and heating units and associated ductwork as well as understand heat loads for optimum efficiency.
  - a. Lab competency to be followed is – lab 1-c, HVAC system QI checklist.
5. Recover charge and vacuum refrigeration systems to proper levels.
  - a. Lab competencies to be followed are – comp 55, active method of recovery and comp 60, evacuating and air conditioning system.
6. Understand and apply current laws and procedures associated with section 608 of the Clean Air Act.
  - a. Passing scores for EPA 608 test will be assessment procedure.

*Bin Ellett asked the committee for a motion to approve the assessment methods as presented.  
 Robb Havens made a motion to approve the assessment methods as presented.  
 Zack Cole seconded the motion.*

*The motion has passed and we approve the assessment methods as presented.*

**Workplace Competency:**

*Bin Ellett asked the faculty member, Scott McClure, to please tell us about the competency and how the students have preformed on the competency.*

HART 2436 Air Conditioning Troubleshooting is the capstone course for the HVAC program. In this class all previous classes are reviewed and lab competencies are performed to demonstrate student achievement of required skills. Students repeat the skills until an acceptable level is reached, making for a 100% pass rate, the program had 9 students in the HART 2436 class from the fall of 2018 to the spring of 2019 with all passing with A's.

The lab competencies are attached to the program outcomes.

Program Outcome	Number of students who took course or licensure exam	Results per student	Use of results
1.	9	100%	Keep doing what is being done.
2.	9	100%	***
3.	9	100%	***
4.	9	100%	***
5.	9	100%	***
6.	9	82%	Put more responsibility on the student for studying for EPA exam

*Bin Ellett asked the committee for a motion to approve the workplace competency as presented.  
 Robb Havens made a motion to approve the workplace competency as presented  
 Chris Johns seconded the motion.*

*The motion has passed and we approve the workplace competency as presented.*

**Program Specific Accreditation Information and Requirements (if applicable)**

*Bin Ellett asked the faculty, Scott McClure, to inform the committee on the program’s accreditation information and requirements.*

Accredited by PAHRA till 2022.

*Bin Ellett asked the committee if there was any discussion and there was none.*

**Review program curriculum/courses/degree plans.**

*Bin Ellett asked the faculty, Scott McClure, to discuss the program’s curriculum and degree plans with the committee.*

# Heat, Ventilation, and Air Conditioning, A.A.S.

CIP 15.0501

Instructional Location - Skills Training Center

**ASSOCIATE IN APPLIED SCIENCE DEGREE** (Probable Completion Time - 2 years)

## General Education Requirements (15 SH)

<b><u>ENGL 1301</u></b>	Composition I	3
<b><u>GOVT 2305</u></b>	Federal Government (Federal Constitution and Topics)	3
<b><u>MATH 1314</u></b>	College Algebra	3
	or	
<b><u>MATH 1332</u></b>	Contemporary Mathematics	3
<b><u>SPCH 1315</u></b>	Public Speaking	3
SFF>	Language, Philosophy, and Culture or Creative Arts Elective	3

## Major Requirements (45 SH)

<b><u>HART 1401</u></b>	Basic Electricity for HVAC	4
	or	
<b><u>ELPT 1411</u></b>	Basic Electrical Theory (A)	4
<b><u>HART 1403</u></b>	Air Conditioning Control Principles	4
<b><u>HART 1407</u></b>	Refrigeration Principles	4
<b><u>HART 1441</u></b>	Residential Air Conditioning	4
<b><u>HART 1445</u></b>	Gas and Electric Heating	4
<b><u>HART 2434</u></b>	Advanced Air Conditioning Controls	4
<b><u>HART 2436</u></b>	Air Conditioning Troubleshooting	4
	or	
<b><u>HART 2468</u></b>	Practicum (or Field Experience) - Heating, Air Conditioning, and Refrigeration Technology/Technician	4
<b><u>HART 2441</u></b>	Commercial Air Conditioning	4
<b><u>HART 2449</u></b>	Heat Pumps	4
TBA*	Electives	9
	<b>Total Credit Hours:</b>	<b>60</b>

\* Approved electives to be selected from the following courses: **COSC 1301** or **ITSC 1301(A)** or **BCIS 1305**, **ELPT 1441**, **ITNW 1325 (A)**, **OSHT 1309**, **WLDG 1428 (A)**, or course approved by instructor.

> To be selected from the following: **ARTS 1301**, **DRAM 1310**, **DRAM 2366**, **ENGL 2322**, **ENGL 2323**, **ENGL 2327**, **ENGL 2328**, **ENGL 2332**, **ENGL 2333**, **HIST 2311**, **HIST 2312**, **MUSI 1306 (A)** Course included on the State's Advanced Technical Credit list. (See **Advanced Technical Credit**.)

### Verification of Workplace Competencies: Capstone Experience –

<b><u>HART 2436</u></b>	Air Conditioning Troubleshooting	4
	or	
<b><u>HART 2468</u></b>	Practicum (or Field Experience) - Heating, Air Conditioning, and Refrigeration Technology/Technician	4

# Heat, Ventilation, and Air Conditioning, Level 1 Certificate

CIP 15.0501

Level 1 Certificate

Instructional Location - Skills Training Center

**CERTIFICATE OF COMPLETION** (Probable Completion Time – 9 months or 32 weeks)

## Major Requirements (36 SH)

<b><u>HART 1401</u></b>	Basic Electricity for HVAC	4
	or	
<b><u>ELPT 1411</u></b>	Basic Electrical Theory (A)	4
<b><u>HART 1403</u></b>	Air Conditioning Control Principles	4
<b><u>HART 1407</u></b>	Refrigeration Principles	4
<b><u>HART 1441</u></b>	Residential Air Conditioning	4
<b><u>HART 1445</u></b>	Gas and Electric Heating	4
<b><u>HART 2434</u></b>	Advanced Air Conditioning Controls	4
<b><u>HART 2436</u></b>	Air Conditioning Troubleshooting	4
<b><u>HART 2441</u></b>	Commercial Air Conditioning	4
<b><u>HART 2449</u></b>	Heat Pumps	4
	or	
<b><u>HART 2468</u></b>	Practicum (or Field Experience) - Heating, Air Conditioning, and Refrigeration Technology/Technician	4
	<b>Total Credit Hours:</b>	<b>36</b>

*(A) Course included on the State's Advanced Technical Credit list. (See **Advanced Technical Credit.**)*

## Heat, Ventilation, and Air Conditioning Occupational Skills Award (12 Semester Hours):

<b><u>HART 1401</u></b>	Basic Electricity for HVAC	4
	or	

<b><u>ELPT 1411</u></b>	Basic Electrical Theory (A)	4
<b><u>HART 1403</u></b>	Air Conditioning Control Principles	4
<b><u>HART 1407</u></b>	Refrigeration Principles	4

### Verification of Workplace Competencies: Capstone Experience –

<b><u>HART 2436</u></b>	Air Conditioning Troubleshooting	4
	or	
<b><u>HART 2468</u></b>	Practicum (or Field Experience) - Heating, Air Conditioning, and Refrigeration Technology/Technician	4

**HART 1401 Basic Electricity for HVAC** - Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

Demonstrate knowledge of basic principles of electricity, electrical current, circuitry, and air conditioning devices; apply Ohm's law to electrical calculations; perform electrical continuity, voltage, and current tests with appropriate meters; and demonstrate electrical safety.

**ELPT 1411 Basic Electrical Theory** - Basic theory and practice of electrical circuits. Includes calculations as applied to alternating and direct current.

Explain atomic structure and basic values such as voltage, current, resistance, and power; determine electrical values for combination circuits in direct current (DC) and alternating current (AC) containing resistance, inductance, and capacitance; summarize the principles of magnetism; calculate voltage drop based on conductor length, type of material, and size; and utilize electrical measuring instruments.

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**HART 1403 Air Conditioning Control Principles** - A basic study of HVAC and refrigeration controls; troubleshooting of control components; emphasis on use of wiring diagrams to analyze high and low voltage circuits; a review of Ohm's law as applied to air conditioning controls and circuits.

Test, repair, and/or replace HVAC-related electrical and control components, wiring and equipment; read, draw, and interpret high and low voltage control circuits.

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**HART 1407 Refrigeration Principles** - An introduction to the refrigeration cycle, heat transfer theory, temperature/pressure relationship, refrigerant handling, refrigeration components, and safety.

Identify refrigeration components; explain operation of the basic refrigeration cycle and heat transfer; demonstrate proper application and/or use of tools, test equipment, and safety procedures.

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**HART 1441 Residential Air Conditioning** - A study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems.

Identify various types of system applications; perform charging, recovery, and evacuation procedures of an installed system; perform component and part diagnostics and replacement; and perform system maintenance.

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**HART 1445 Gas and Electric Heating** - Study of the procedures and principles used in servicing heating systems including gas fired furnaces and electric heating systems.

Identify different types of gas furnaces; identify and describe component operation of gas furnaces; service and troubleshoot gas furnaces; perform safety inspections on gas and electric heating systems; identify unsafe operation of gas furnaces; identify and discuss component operation of electric heating systems; and service and troubleshoot electric heating systems.

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**HART 2434 Advanced Air Conditioning Controls** - Theory and application of electrical control devices, electromechanical controls, and/or pneumatic controls.

Install and troubleshoot complex electrical control devices; control circuits; apply A/C control concepts; and analyze the effects of smart energy networks and how they interface with HVAC control systems.

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**HART 2436 Air Conditioning Troubleshooting** - An advanced course in application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests.

Test and diagnose components, systems, and accessories; complete applicable documentation.



**HART 2441 Commercial Air Conditioning** - A study of components, applications, and installation of air conditioning systems with capacities of 25 tons or less.

Apply and describe the sequence of operation for commercial air conditioning systems and their accessories; identify components relative to commercial air conditioning; and explain energy efficient and renewable energy technologies.

**HART 2449 Heat Pumps** - A study of heat pumps, heat pump control circuits, defrost controls, auxiliary heat, air flow, and other topics related to heat pump systems.

Explain a reverse cycle system; list the mechanical and electrical components for the heat pump operation; and explain the operation of heat pump modes including cooling, heating, defrost, emergency heat, and auxiliary heat mode. Identify and explain different methods of accomplishing defrost; charge a system correctly in the heating and cooling mode; troubleshoot electrical and mechanical components; perform tests for adequate air flow; and determine balance point and coefficient of performance (C.O.P.); and define attributes of geothermal heat pump systems.

HVAC 20-21							
Certificate Level 1, CIP 15.0501, 32 weeks							
CIP	Course	Title	Sem	SCH	Lec	Lab	"Contact Hrs"
15.0501	HART 1401			4	3	2	80
	or						
	ELPT 1411						
15.0501	HART 1403			4	3	2	80
15.0501	HART 1407			4	3	2	80
15.0501	HART 1441			4	3	2	80
15.0501	HART 1445			4	3	2	80
15.0501	HART 2434			4	3	2	80
15.0501	HART 2436			4	3	2	80
15.0501	HART 2441			4	3	2	80
15.0501	HART 2449			4	3	2	80
	or						
	HART 2468						
				36			720

Degree							
CIP	Course	Title	Sem	SCH	Lec	Lab	"Contact Hrs"
	ENGL 1301	Comp I		3	3	0	48
	GOVT 2305	Fed Govt		3	3	0	48
	MATH 1314	College Alg		3	3	0	48
	SPCH 1315	Public Spk		3	3	0	48
	Humanities			3	3	0	48
15.0501	HART 1401			4	3	2	80
	or						
	ELPT 1411						
15.0501	HART 1403			4	3	2	80
15.0501	HART 1407			4	3	2	80
15.0501	HART 1441			4	3	2	80
15.0501	HART 1445			4	3	2	80
15.0501	HART 2434			4	3	2	80
15.0501	HART 2436			4	3	2	80
	or						
	HART 2468						
15.0501	HART 2441			4	3	2	80
15.0501	HART 2449			4	3	2	80
	Electives			9	6	6	192
				60			1152
	OSHT 1309	Take out of catalog, no longer offered					

*Bin Ellett asked for a motion to approve the programs revisions with the discussed removal of OSHT as presented.*

*Robb Havens made a motion to approve the programs revisions with the discussed removal of OSHT as presented.*

*Chris Johns seconded the motion.*

*The motion has passed and the committee will approve the program revisions as presented.*

**Review Secretary’s Commission on Achieving Necessary Skills (SCANS), General Education, and Program Outcomes Matrices**

*Bin Ellett asked the faculty member, Scott McClure, to discuss the matrices with the committee. Shana Drury clarified some of the information for the committee.*

**SCANS Matrix: The SCANS (Secretary’s Commission on Achieving Necessary Skills) Matrix represents the 8 Federal requirements that must be taught. The matrix shows how we are mapping them back to each of the courses in the program.**

<b>Program: Heating, Ventilation, and Air Conditioning</b>								<b>Credential: Associate in Applied Science (AAS) Degree</b>	
Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree									
Cip: 15.0501									
<b>LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES</b>									
SCANS COMPETENCIES								Course Number	Course Title
1	2	3	4	5	6	7	8		
X	X	X	X	X	X	X		Either HART 1401* or	Basic Electricity for HVAC
X	X	X	X	X	X	X		ELPT 1411	Basic Electrical Theory
X	X	X	X	X	X	X		HART 1403*	Air Conditioning Control Principles
X	X	X	X	X	X	X		HART 1407*	Refrigeration Principles
X	X	X	X	X	X	X		HART 1441*	Residential Air Conditioning
X	X	X	X	X	X	X		HART 1445 *	Gas and Electric Heating
X	X	X	X	X	X	X	X	HART 2434*	Advanced A/C Controls
X	X	X	X	X	X	X	X	Either HART 2436* or	Air Conditioning Troubleshooting
X	X	X	X	X	X	X		HART 2441*	Commercial Air Conditioning
X	X	X	X	X	X	X		HART 2449*/ HART 2468*	Heat Pumps/Practicum (or Field Experience) - Heating, Air Conditioning, & Refrigeration Technology/Technician
									TBA Electives Either/ or
	X	X	X		X	X		Either ACNT 1325 or	Principles of Accounting
X	X	X	X		X	X		COSC 1301	Introduction to Computing
X	X	X	X		X	X		ITSC 1301	Introduction to Computers
X		X	X	X	X			ELPT 1441 or	Motor Control
X	X	X	X	X	X	X		ITNW 1325 or	Fundamentals of Networking Technologies
X	X	X	X	X	X	X		OSHT 1309 or	Physical Hazards Control
			X	X	X			WLDG 1428	Introduction to Shielded Metal Arc Welding (SMAW)
								8. BASIC USE OF COMPUTERS	
								7. WORKPLACE COMPETENCIES	
								6. PERSONAL QUALITIES	
								5. THINKING SKILLS	
								4. SPEAKING AND LISTENING	
								3. ARITHMETIC OR MATHEMATICS	
								2. WRITING	
								1. READING	

**General Education Matrix: The General Education Matrix is state mandated. You will see the 6 requirements that the college is tasked with teaching and how they map back to the courses.**

<b>Program: Heating, Ventilation, and Air Conditioning</b>						<b>Credential: Associate in Applied Science (AAS) Degree</b>	
Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree							
Cip: 15.0501							
<b>LIST OF ALL COURSES REQUIRED AND IDENTIFIED CORE OBJECTIVES</b>							
<b>GENERAL EDUCATION CORE OBJECTIVES</b>						<b>Course Number</b>	<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
x	x		x		x	ENGL 1301	Composition I
x	x			x	x	GOVT 2305	Federal Government (Federal Constitution and Topics)
x	x	x				MATH 1314 or MATH 1332	College Math/Contemporary Mathematics I
x	x		x		x	SPCH 1315	Public Speaking
x	x	x	x	x	x	Either HART 1401 * or	Basic Electricity for HVAC
						ELPT 1411	Basic Electrical Theory
x	x	x	x	x	x	HART 1403*	Air Conditioning Control Principles
x	x	x	x	x	x	HART 1407*	Refrigeration Principles
x	x	x	x	x	x	HART 1441*	Residential Air Conditioning
x	x	x	x	x	x	HART 1445 *	Gas and Electric Heating
x	x	x	x	x	x	HART 2434*	Advanced A/C Controls
x	x	x	x	x	x	Either HART 2436 8 or	Air Conditioning Troubleshooting
x	x	x	x	x	x	HART 2441*	Commercial Air Conditioning
x	x	x	x	x	x	HART 24498/ HART 2468*	Heat Pumps/ Practicum (or Field Experience) - Heating, Air Conditioning, & Refrigeration Technology/Technician
							TBA Electives Either/ or
X		X		X	X	ACNT 1325	Principles of Accounting
X		X		X	X	COSC 1301	Introduction to Computing
X		X		X	X	ITSC 1301	Introduction to Computers
X			X	X	X	ELPT 1441 or	Motor Control
X	X	X	X	X	X	ITNW 1325 or	Fundamentals of Networking Technologies
X	X		X	X	X	OSHT 1309 or	Physical Hazards Control
X	X			X	X	WLDG 1428	Introduction to Shielded Metal Arc Welding (SMAW)
						6. Personal Responsibility	
						5. Social Responsibility	
						4. Teamwork	
						3. Empirical and Quantitative Skills	
						2. Communication Skills	
						1. Critical Thinking Skills	

**Program Outcomes Matrix: The Outcomes Matrix represents the Vernon College mandated requirements. They are the Program outcomes just approved and how they map back to the courses.**

<b>Program: Heating, Ventilation, and Air Conditioning</b>							<b>Credential: Associate in Applied Science (AAS) Degree</b>
Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree							
Cip: 15.0501							
<b>LIST OF ALL COURSES REQUIRED AND</b>							
<b>OUTCOMES</b>							
<b>OUTCOMES</b>						<b>Course Number</b>	<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
		x	x	x	x	Either HART 1401* or	Basic Electricity for HVAC
x	x	x	x	x	x	HART 1403*	Air Conditioning Control Principles
		x	x	x	x	ELPT 1411	Basic Electrical Theory
x	x	x		x	x	HART 1407*	Refrigeration Principles
x	x	x			x	HART 1441*	Residential Air Conditioning
		x	x	x		HART 1445 *	Gas and Electric Heating
					x	HART 2434*	Advanced A/C Controls
x	x	x	x	x	x	HART 2436*	Air Conditioning Troubleshooting
x	x	x	x		x	HART 2441*	Commercial Air Conditioning
x	x	x		x	x	HART 2449*/HART 2468*	Heat Pumps/ Practicum (or Field Experience) - Heating, Air Conditioning, & Refrigeration Technology/Technician
							9 hours of Electives
						Analyze airflow, refrigerant flow, and electron flow to evaluate the operating efficiency of air conditioning systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Analyze airflow, refrigerant flow and electron flow to evaluate the operating efficiency of heat pumps; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Analyze airflow, gas flow and electrical flow to evaluate the operating efficiency of gas fired heating systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Evaluate the installation of air conditioning and heating units and associated ductwork as well as understand heat loads for optimum efficiency.	
						Recover charge and vacuum refrigeration systems to proper levels	
Understand and apply current laws and procedures associated with section 608 of the Clean Air Act							

**Institutional Outcomes Matrix: The Institutional Outcomes Matrix represents the Vernon College mandated requirements. This matrix represents how the program outcomes map back to the institutional outcomes/general education outcomes.**

<b>Program: Heating, Ventilation, and Air Conditioning</b>							<b>Credential: Associate in Applied Science (AAS) Degree</b>
Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree							
Cip: 15.0501							
<b>LIST OF ALL COURSES REQUIRED AND</b>							
<b>OUTCOMES</b>							<b>General Education Outcomes</b>
<b>OUTCOMES</b>							
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
x	x	x	x	x	x	1. Critical Thinking Skills	
x	x	x	x	x	x	2. Communication Skills	
x	x	x	x	x	x	3. Empirical and Quantitative Skills	
	x	x	x	x	x	4. Teamwork	
x	x	x	x	x	x	5. Social Responsibility	
x	x	x	x	x	x	6. Personal Responsibility	
						Analyze airflow, refrigerant flow, and electron flow to evaluate the operating efficiency of air conditioning systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Analyze airflow, refrigerant flow and electron flow to evaluate the operating efficiency of heat pumps; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Analyze airflow, gas flow and electrical flow to evaluate the operating efficiency of gas fired heating systems; diagnose problems/inefficiencies; and make necessary adjustments and/or perform service repairs as needed.	
						Evaluate the installation of air conditioning and heating units and associated ductwork as well as understand heat loads for optimum efficiency.	
						Recover charge and vacuum refrigeration systems to proper levels	
						Understand and apply current laws and procedures associated with section 608 of the Clean Air Act	

*Bin Ellett asked for a motion to approve all matrices as presented.  
Robb Havens made a motion to approve all matrices as presented.  
Chris Johns seconded that motion.*

*The motion passed to approve the matrices as presented.*

**Program statistics: Graduates (from previous year/semester), current majors, current enrollment**

- Program Statistics:
  - Graduates 2018-2019: (9)
  - Enrollment Summer 2019: (0.)
  - Majors Fall 2019-2020: (30.)
  - Enrollment Fall 2019: (30.)

**Local Demand**

*Chris Johns stated that they always have openings, and they are always looking for the right people.*

*Robb Havens stated the same that they are always searching and interviewing. Needs to be a qualified person with work ethic and be able to be personable. They do try to call Scott to asked for recommendations. Scott stated that sometimes students ask where to apply.*

**Evaluation of facilities, equipment, and technology. Recommendation for acquisition of new equipment and technology.**

*Bin Ellett asked if the committee had an opportunity to tour the facilities and labs. If the committee or the faculty had any recommendations for equipment or technology.*

Have not purchased any new equipment.

**External learning experiences, employment, and placement opportunities**

*Bin Ellett asked if the faculty member, Scott McClure, would like to review the following with the committee.*

HART 2468 is the class for external learning experience. Have not had any students taking this class this past year nor currently.

\*Due to Perkins transition this is the most recent report

<b>Placement Rate of Program Completers by Reporting Year [1]</b>			
<b>Program</b>	<b>2013-2016 3-Year Average</b>		
	<b>Plc</b>	<b>Cmp</b>	<b>%</b>
15050000-Environmental Control Technologies/Technicians	29	33	87.88%

**Professional development of faculty and recommendations**

*Bin Ellett asked the committee to take time to review the professional development opportunities the faculty member has taken advantage of.*

No Perkins travel. Watching webinars with students and providing CE training for contractors.

*Bin Ellett asked the committee to take this time to review the promotion and publicity opportunities that those leading the program have taken advantage of.*

Continued running of HVAC commercial on Facebook.  
Tours for high schoolers at Skills.  
Tour at Century City with CTE program highlighted.

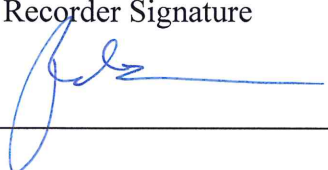
*Bin Ellett asked the committee if they had any discussion or recommendations.*

**Serving students from special populations.**

*Bin Ellett asked the committee to review the information below. Scott McClure mentioned the three females currently enrolled.*

1. Special populations new definitions:
  - a. Individuals with disabilities;
  - b. Individuals from economically disadvantaged families, including low-income youth and adults;
  - c. Individuals preparing for non-traditional fields;  
(3 women currently in the program)
  - d. Single parents, including single pregnant women;
  - e. Out-of-workforce individuals;
  - f. English learners;
  - g. Homeless individuals described in section 725 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11434a);
  - h. Youth who are in, or have aged out of, the foster care system; and
  - i. Youth with a parent who—
    - i. a. is a member of the armed forces (as such term is defined in section 101(a)(4) of title 10, United States Code);
    - ii. b. is on active duty (as such term is defined in section 101(d)(1) of such title).

Adjourn – 1:20 pm

Recorder Signature 	Date 7/6/2020	Next Meeting: Fall 2020
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