Advisory Committee Fall 2018 Annual Meeting
HVAC
Vernon College – Skills Training Center Thursday November 8, 2018 12:00pm

Lee Ritchie – Chair
Bin Ellett – Vice Chair
Chris Johns – Recorder

Members Present:
Chris Johns – Mike Graham Heating and Air
Lee Ritchie – Texoma Heating and Air
Brittany Butler – Texoma Heating and Air
Sara Meek - Sporlan
Bin Ellett – Ellett A/C and Heating
Ryan Ellett – Ellett A/C and Heating

Staff and Faculty Present:
Mark Holcomb
Scott McClure
Shana Drury
Elizabeth Crandall
Mollie Williams
Holly Scheller
Lou Lucero

Members Absent:
Kitty Howard
Eddie Johnson
Robb Havens

Lee Ritchie discussed the old business:

* Stanley and Betty Ray Scholarship – awarded $711.00 to a student.
* EPA exam – in the spring 9 took test, none passed all 4 sections first round, 3 got all passed after retest.
* ICE exam – in the spring 7 took the test, none passed all 5 sections, 1 passed 4 sections
*Got freezer up and running

Lee Ritchie discussed the new business:

Program Outcomes:

Discussion and review took place among committee members regarding the program outcomes listed below.

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.

After discussion, Lee Ritchie asked for a motion to approve program outcomes.
Bin Ellett made motion to approve program outcomes as presented.
Chris Johns seconded the motion.

The motion to approve program outcomes passed.

Assessment Methods:

Lee Ritchie asked that assessment methods and results be discussed and asked Mr. McClure to elaborate.

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.

Lee Ritchie asked for a motion to approve assessment methods with revisions. Would like to remove 6.A and replace with selected test questions in HART 2436.
Chris Johns made motion to approve assessment methods revisions.
Bin Ellett seconded the motion.

The motion to approve assessment methods and results passed.

Workplace Competency

Workplace competencies were discussed in detail below.

> 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 lab competencies are attached to the program outcomes.

After discussion, Lee Ritchie asked for a motion to approve workplace competency.
Chris Johns made motion to approve workplace competency as presented.
Bin Ellett second the motion.

The motion to approve workplace competency as presented passed.

Review program curriculum:

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)

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

Major Requirements (45 SH)

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

** Approved electives to be selected from the following courses:* ***ACNT 1325*** *(A),* ***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 –

HART 2436	Air Conditioning Troubleshooting	4
	or	
HART 2468	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)

HART 1401	Basic Electricity for HVAC	4
	or	
HART 1403	Air Conditioning Control Principles	4
HART 1407	Refrigeration Principles	4
HART 1441	Residential Air Conditioning	4
HART 1445	Gas and Electric Heating	4
HART 2434	Advanced Air Conditioning Controls	4
HART 2436	Air Conditioning Troubleshooting	4
HART 2441	Commercial Air Conditioning	4
HART 2449	Heat Pumps	4
	or	
HART 2468	Practicum (or Field Experience) - Heating, Air Conditioning, and Refrigeration Technology/Technician	4

	Total Credit Hours:	**36**

(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):

HART 1401	Basic Electricity for HVAC	4
	or	
ELPT 1411	Basic Electrical Theory (A)	4
HART 1403	Air Conditioning Control Principles	4
HART 1407	Refrigeration Principles	4

Verification of Workplace Competencies: Capstone Experience –

HART 2436	Air Conditioning Troubleshooting	4
	or	
HART 2468	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.

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.

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.

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.

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.

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.

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 coefficiency of performance (C.O.P.); and define attributes of geothermal heat pump systems.

Approve program revisions:

*Drop EPA testing from a required status.

After discussion, Lee Ritchie asked for a motion to approve program as revised. The EPA fee will be removed from HART 1407.
Chris Johns made motion to approve program as presented.
Ryan Ellett second the motion.

The motion to approve program as presented passed.

Review of Matrices:

Lee Ritchie led the discussion on Review Secretary's Commission on Achieving Necessary Skills (SCANS), General Education, Program Outcomes Matrices, and Institutional Outcomes Matrices and asks the faculty to expand on them.

Scott McClure explains the matrices below.

Program: Heating, Ventilation, and Air Conditioning									**Credential: Associate in Applied Science (AAS) Degree**
Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree									
Cip: 15.0501									
LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES									
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					

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Cip: 15.0501							
IDENTIFIED CORE OBJECTIVES						**LIST OF ALL COURSES REQUIRED AND**	
GENERAL EDUCATION CORE OBJECTIVES						**Course Number**	**Course Title**
1	**2**	**3**	**4**	**5**	**6**		
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	Either ACNT 1325 or	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							

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Cip: 15.0501							
LIST OF ALL COURSES REQUIRED AND OUTCOMES							
OUTCOMES						**Course Number**	**Course Title**
1	**2**	**3**	**4**	**5**	**6**		
		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				

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Award: Heating, Ventilation, and Air Conditioning Associate in Applied Science (AAS) Degree						
Cip: 15.0501						
LIST OF ALL COURSES REQUIRED AND OUTCOMES						
OUTCOMES						**General Education Outcomes**
1	**2**	**3**	**4**	**5**	**6**	
x	x	x	x	x		1. Critical Thinking Skills
x	x	x	x	x		2. Communication Skills
x	x	x	x	x		3. Empirical and Quantitative Skills
	x	x	x	x		4. Teamwork
x	x	x	x	x		5. Social Responsibility
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						

Lee Ritchie asked for a motion to approve matrices.
Chris Johns made motion to approve matrices as presented.
Ryan Ellett seconded the motion.

The motion to approve matrices as presented passed.

Program statistics:

Lee Ritchie proceeded into discussing Program statistics

- Program Statistics:
  - Graduates 2017-2018: 16
  - Enrollment Summer 2018: 3
  - Majors Fall 2018-2019: 26
  - Enrollment Fall 2018: 26

Local Demand:

Chris Johns at Mike Graham Heating and Air is always looking to hire more students. Lee Ritchie has a couple more openings come summer time. There is always a huge influx of needed technicians in the spring/summer time.

Evaluation of facilities and equipment:

Lee Ritchie opened up discussion on evaluation of facilities, equipment, and technology. Recommendation for acquisition of new equipment and technology.

*Purchased the walk-in freezer last year and got it up and running last winter
*Purchased a flue gas analyzer this year.

External learning experiences:

Lee Ritchie moved discussion to external learning experiences, employment, and placement opportunities

Have not had any practicums the past year.

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

Professional development of faculty:

The Chair moves to professional development of faculty and recommendations:

Still providing continuing education twice a year for HVAC contractors. Providing this course keeps me updated on state law requirements and I also cover a new HVAC training topic every year. This year's covered combustion analysis and efficiency.
Webinars provide by RSES are still utilized by me and students in class.
Vernon college provides regular training covering numerous topics.

Promotion and publicity:

Lee Ritchie proceeds to promotion and publicity (recruiting) about the program to the community and to business and industry

*A well put together commercial for the HVAC program has been airing on TV. Recruiting events are held in the fall and spring that faculty are involved in. The CE class provided in the fall and spring is a good publicity activity.

Serving students from special populations:

Lee Ritchie would like to discuss serving students from special populations.

1. individuals with disabilities; many of my student have learning disabilities, reason why they do so bad on the ICE and Epa exams
2. individuals from economically disadvantaged families, including foster children;
3. individuals preparing for non-traditional fields;
4. single parents, including single pregnant women;
5. displaced homemakers; and
6. individuals with limited English proficiency

Program Specific Accreditation Information and Requirements:

The HVAC program is accredited by the Partnership for Air Conditioning, Heating and Refrigeration Accreditation

Adjourn
The meeting adjourned at 1:15PM

Recorder Signature:	Date: 4-16-19	Next Meeting: Fall 2019