



Heating & Air Conditioning Instructional Program Review 2009-2010

Fall 2009

Prepared by

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PROGRAM REVIEW – Heating & Air Conditioning

The final summary of the program review process for Heating & Air Conditioning is attached to this page.

I affirm that this program has been reviewed according to the accepted District procedures for program review and that the final summary accurately reflects the consensus of the members of the review committee.

James Lancaster, Dean of Career Technical Education

date

Michelle Plug, Articulation Officer

date

David Kary, Chair of Curriculum Committee

date

Irene Malmgren, Vice President of Academic Affairs

date

Jack Call, Academic Senate President

date

Geraldine M. Perri, Superintendent/President

date

It will be the department's responsibility to communicate review recommendations with additional offices and services.

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1. Executive Summary

The Program Review process has confirmed that the Heating and Air Conditioning Program is aligned with the Citrus College Mission and also confirmed the Need for this instructional program. The Quality of the program was thoroughly examined, along with Feasibility and Compliance, to the satisfaction of all Review Team members. Previous recommendations have been addressed over the past six years, and Student Learning Outcomes have been written for the program and every course in Heating and Air Conditioning. SLO Assessment Matrices will be completed by 2012.

Instructors in this program demonstrate dedication to their students and their curriculum, volunteering their time to develop SLOs and curriculum updates. Options for a new lab facility are being explored both on-campus and off-campus. Class rotations, despite budget course deletions, allow students to complete the Certificate of Achievement within two years. A high percentage of students leave the program before completing their Certificate because they meet their career and educational goals.

The review team's recommendations were:

1. Hire a full-time faculty position in the Public Services Department to provide technical leadership, curriculum development, and representation on committees
2. Add a safety statement to all syllabi
3. Add a new class, HEAT 175 Basic Electrical, as a prerequisite for HEAT 184 Electricity for Heating and Air Conditioning
4. Track students' progress toward their Certificate of Achievement and Degree
5. Reduce the number of Student Learning Outcomes for the courses and the program
6. Add a reading schedule to syllabi
7. The lab facility for the program lacks proper air conditioning and heating, sound abatement, and instructional technology. An appropriate facility needs to be identified so that students can learn in a professional environment

2. Faculty

Full-Time Faculty
None

Adjunct Faculty
Paul Fallat
James Toda

3. List of Program Courses

Subject & Course No.	Title	Units
HEAT 170	Air Conditioning I	2
HEAT 180	Air Conditioning II	2
HEAT 182	Heating - Electrical and Gas	2
HEAT 184	Electricity for Heating and Air Conditioning	2
HEAT 186	Control Systems	2
HEAT 188	Trouble Shooting Heating and Air Conditioning	2
HEAT698A	Cooperative Work Experience Education	1
HEAT698B	Cooperative Work Experience Education	2
HEAT698C	Cooperative Work Experience Education	3
HEAT698D	Cooperative Work Experience Education	4
HEAT699A	Cooperative Work Experience Education	1
HEAT699B	Cooperative Work Experience Education	2
HEAT699C	Cooperative Work Experience Education	3
HEAT699D	Cooperative Work Experience Education	4

Classes not offered in the last two years:

Subject & Course No.	Title	Units
HEAT698A	Cooperative Work Experience Education	1
HEAT698B	Cooperative Work Experience Education	2
HEAT698C	Cooperative Work Experience Education	3
HEAT698D	Cooperative Work Experience Education	4
HEAT699A	Cooperative Work Experience Education	1
HEAT699B	Cooperative Work Experience Education	2
HEAT699C	Cooperative Work Experience Education	3
HEAT699D	Cooperative Work Experience Education	4

*Though not requested by students in the last two years, Cooperative Work Experience Education classes will be part of the new Certificates of Achievement in Energy Systems Technology.

4. List of Degrees

None at this time. A degree is being developed.

5. List of Certificates and Awards

In 2009, the Heating & Air Conditioning Skill Award was upgraded to a Certificate of Achievement, according to Title V changes effecting 12-unit certificates. In the past six years, Citrus College has issued Heating & Air Conditioning Skill Awards:

2003-2004: 7
2004-2005: 2
2005-2006: 6
2006-2007: 7
2007-2008: 6
2008-2009: 3

Heating & Air Conditioning Certificate of Achievement

Required Courses:

HEAT 170 Air Conditioning I
HEAT 180 Air Conditioning II
HEAT 182 Heating - Electrical and Gas
HEAT 184 Electricity for Heating and Air Conditioning

Plus two of the following:

HEAT 186 Control Systems
HEAT 188 Trouble Shooting Heating and Air Conditioning
DRAF 101 CAD (Computer Aided Design) and Mechanical Drawing
DRAF 154 Commercial and Industrial Buildings
PUB 164 Plan Interpretation and Cost Estimating
EST 150 Green Building Systems Technology
ELEC 101 Electronics Fundamentals
TECH 100 Principles of Technology

6. List of Industry-Based Standard Certificates and Licenses

The Environmental Protection Agency (EPA) exam is required by all who plan to enter the field of Heating and Air Conditioning. The Heating & Air Conditioning program classes prepare students to pass the EPA exam, and it is proctored by one of the Citrus College adjunct professors.

7. Advisory Committee or Council

Frank Acosta	RS Air Conditioning & Heating, Inc.
Justin Bass	Solar City
Paul Beeson	Solar World California
Wayne Boothby	Mike Diamond Plumbing, Inc.
Vickie Burch	Baldwin Park Unified School District
John Copley	Danco
Diego DiBenedetto	Canyon Air Service Inc
Don Dietiker	J.J.A.T.C. - Air Conditioning Training Center
Susie Evans	Institute of Heating and Air Conditioning Industries
Paul Fallat	L.A.U.S.D - HVAC Fitter Tech
Wayne Freiman	Cypress College
Mary Ann Garcia	Institute of Heating and Air Conditioning Industries
Humberto Gomez	So. California District Council of Laborers
Lucas Greg	Value Solar
Robert Helbing	Air Tro Inc.
Bob Hernandez	Crown Heating & Air Conditioning Services
Kim Holland (Chair)	Citrus College
Kevin Holme	RCC Solar
Bill Korthoff	Energy Efficiency Solar
Elsa Lopez	Water Replenishment District of So. California
Lee Mai	Verengo Solar Plus
Thomas Martinez	NECA & IBEW Local 11
Harry Panjabi	Rama Enterprises
Sergio Rascon	Laborers' Local 300 Administrative Office
Luis Reyes	Johnson Controls
Jorge Rodriguez	Laborers' Local 300 Administrative Office
Raul Romero	United Domestic Workers of America
Alex Sanchez	Indoor Comfort News
Roy Schwartz	Solar Power Partners
Ray Serrato	RS Air Conditioning & Heating, Inc.
Mimi Skinner	Mike Diamond Plumbing, Inc.
Dan Tanaka	Southern California Pipe Trades
James Thompson	Mike Diamond Plumbing, Inc.
Jim Toda	Conditioning Components
Frank Tom	Solar Monkey
Charles Trevino	Upper San Gabriel Valley MWD
Ralph Velador	So. California District Council of Laborers
Somerset Waters	Solar City

8. Program Student Learning Outcomes

The Heating & Air Conditioning Program has adopted the Institutional General Education Competencies of Citrus College (as approved by Steering December 8, 2008). General education competencies serve as a common set of core curricular components identified

and defined by faculty. Student learning outcomes are behaviors based on these competencies.

Any student transferring, completing a degree or certificate from Citrus College, must demonstrate effectively assessed awareness, understanding, knowledge, skills, and abilities in the selected competencies.

Students completing courses in the Heating & Air Conditioning Program will have acquired the following competencies:

1) Communication (personal expression and information acquisition)

a) n/a

2) Computation

a) n/a

3) Creative, Critical, and Analytical Thinking, and Information Competency

a) Using a disabled training panel, demonstrate the ability to read a schematic wiring diagram in order to accurately diagnose heating and air conditioning problems.

4) Community/Global Consciousness and Responsibility

a) Describe the correct handling of refrigerants and related safety and environmental issues in order to pass the Environmental Protection Agency (EPA) exam, required by law for Heating and Air Conditioning technicians

5) Technology

a) Diagram and describe, in writing, reversing valves in heat pump systems in order to demonstrate a clear understanding of heat technology.

b) Demonstrate in a lab setting how to wire a thermostat in order to properly install heating and air conditioning systems.

c) Draw a complete refrigeration system, demonstrating knowledge required for diagnosis and safety.

6) Discipline / (Subject Area Specific Content Material)

a) Describe in detail Ohm's Law on a written exam, exhibiting a thorough knowledge for practical application and safety.

b) Describe the refrigeration cycle in a written exam, demonstrating a fundamental skill required for employment in the Heating and Air Conditioning industry.

c) Explain the purpose and various uses of refrigerant in a written exam, knowledge of which is basic to this industry.

d) Illustrate and describe in detail the theory of gas in order to comply with professional safety standards.

(See attached SLO map.)

Heating & Air Conditioning
Student Learning Outcome Map

	Core Competency #1 <i>Communication</i>	Core Competency #2 <i>Computation</i>	Core Competency #3 <i>Creative, Critical, and Analytical Thinking and Information Competency</i>	Core Competency #4 <i>Community, Global Consciousness and Responsibility</i>	Core Competency #5 <i>Technology</i>	Core Competency #6 <i>Discipline/ Subject Area Specific Content</i>
Program SLOs			Using a disabled training panel, demonstrate the ability to read a schematic wiring diagram in order to accurately diagnose heating and air conditioning problems.	Describe the correct handling of refrigerants and related safety and environmental issues in order to pass the Environmental Protection Agency (EPA) exam, required by law for Heating and Air Conditioning technicians.	Diagram and describe, in writing, reversing valves in heat pump systems in order to demonstrate a clear understanding of heat technology. Demonstrate in a lab setting how to wire a thermostat in order to properly install heating and air conditioning systems. Draw a complete refrigeration system, demonstrating knowledge required for diagnosis and safety.	Describe in detail Ohm's Law on a written exam, exhibiting a thorough knowledge for practical application and safety. Describe the refrigeration cycle in a written exam, demonstrating a fundamental skill required for employment in the Heating and Air Conditioning Industry. Explain the purpose and various uses of refrigerant in a written exam, knowledge of which is basic to this industry. Illustrate and describe in detail the theory of gas in order to comply with professional safety standards.
Course	170	170	170	170	170	170
SLO		Calculate problems using the formula for Ohm's voltage and amperage on a written exam so that on-the-job calculations can be performed.	Compare and contrast, on a written exam, the different types of evacuation procedures required by industry.		Determine high, medium and low temperature ranges and discuss their applications on a written exam, as required by the heating and air conditioning industry.	
SLO			Compare and contrast parallel services and parallel circuits on a written exam, which will enhance the ability to read and understand electrical diagrams.		Determine the four image components, the types of components, and other functions, on a written exam, demonstrating an ability to draw these components as if in operation.	

SLO			Determine and analyze how types of heat and heat transfer effects of refrigeration on a written exam, as is necessary in the refrigeration industry.		Identify, on a written exam, electrical and mechanical hazards, and describe how to take appropriate safety precautions as are implemented on a daily basis at the worksite.	
SLO					Identify tools and equipment used in the air conditioning and refrigeration industry by visual and practical exam.	
SLO					Demonstrate installation of proper fasteners to the appropriate applications as required on the job.	
SLO					Demonstrate the ability to braze, cut, and flare in the lab and on written exam, per industry standards.	
Course	180	180	180	180	180	180
SLO		Calculate total heat on written exam using raw data and total heat formula, in order to determine capacity of a cooling unit.	Plot psychometric chart on written exam using raw data, in order to determine environmental comfort conditions.		Identify the components of an air conditioning system on written exam, to establish refrigeration basics.	
SLO		Calculate Energy Efficiency Ratio on written exam using raw data, in order to correlate efficiency and power consumption.	Plot air friction chart on written exam using raw data, in order to select proper size duct diameters.		Identify the four types of duct systems on written exam, in order to recognize jobsite system types.	
Course	182	182	182	182	182	182
SLO		Calculate cubic feet per minute on written exam using raw data and sensible heat formula, in order to troubleshoot an electric heat unit.	Distinguish between pictorial and schematic wiring diagrams on written exam, in order to analyze low and high voltage circuits.		Identify the components of a gas furnace on written exam, to comprehend gas heat systems.	
SLO			Plot pump curve on written exam using raw data, in order to determine pump performance capabilities.		Identify the components of a gas boiler on written exam, to comprehend boiler basics.	
SLO					Define various types of filters on written exam, in order to distinguish applications for different filters.	

SLO					Diagram an air source heat pump refrigeration cycle on written exam, to differentiate heat pumps from air conditioning systems.	
Course	184	184	184	184	184	184
SLO		Calculate, on a written exam, problems using Ohm's Law and the connection with series, parallel, and compound circuits and their applications, according to industry standards.	Compare and contrast various types of motor controls and identify electrical terminals and control windings for each device, in a lab demonstration, according to industry standards.		Describe and explain on a written exam the theory of electricity and how electricity is produced, in order to understand these concepts on the job.	
SLO		Measure current flow, voltage, and resistance with an electrical test meter in a lab exam, as required by industry.	Analyze the basic physical and electrical characteristics of the most common types of conductors in a lab test, as required in the heating and air conditioning field.		Describe and explain on a written exam magnetism and electron flow to understand how electrical devices operate in the heating and air conditioning field.	
SLO					Illustrate electric power and the effect on resistors and fuses in an oral presentation, according to industry standards.	
SLO					Explain the theory of electromagnetism, solenoids, transformers, and magnetic circuits, as required by industry.	
SLO					On a written exam, draw an alternating current electrical diagram, in order to understand these concepts on the job.	
Course	186	186	186	186	186	186
SLO			Compare and contrast, on a written exam, various types of controls in the air conditioning and refrigeration industry.		Diagnose electrical problems typical to a control circuit, in lab and written exams, as required in the heating and air conditioning industry.	
SLO			On a written exam, analyze the various problems that arise with controls and explain their maintenance and repair, as required in the industry.		Evaluate electrical problems in basic control systems and apply proper procedures to correct them, in lab and written exams, according to industry standards.	

SLO			Create a wiring diagram on a written exam including the controls used in an air conditioning or refrigeration electrical circuit, per industry standards.			
Course	188	188	188	188	188	188
SLO		Using appropriate calculations, diagnose problems encountered in air conditioning, heating and refrigeration systems and identify whether they are electrical, mechanical or sealed system problems, in lab demonstrations and written exams, according to industry standards.	Analyze system problems and then demonstrate the ability to make minor repairs and adjustments to the mechanical and electrical systems, in lab demonstrations and written exams, as required on the job.		Describe in a written exam how to locate, through testing, the cause of short cycling and the proper procedure to repair leaks found in a sealed system, according to industry standards.	
SLO			Analyze the symptoms caused by moisture in a sealed system and provide the solution to correct the problem on written exams, as required in the heating and air conditioning field.		Demonstrate in a lab exercise the procedure used to determine if a compressor is mechanically stuck, and the proper procedure to start a stuck compressor, are required in the industry.	
SLO					Identify safety procedures for working on air conditioning and refrigeration systems, in a lab demonstration.	

9. Program Description / Mission

This program is designed to prepare students who wish to seek employment in the heating and air conditioning industry or qualify for a more responsible position within the field. Courses prepare students for the EPA exam which is required in this industry. Employment as a technician is available in both the public and the private sectors.

10. Program Goals and Objectives

The Heating and Air Conditioning program is designed to prepare students who wish to seek employment in the heating and air conditioning industry or qualify for a more responsible position within the field. Courses prepare student for the EPA exam, which is required in this industry. Employment as a technician is available in both the public and the private sectors.

The goals and objectives of the Heating & Air Conditioning Program are:

- a) Students will gain a fundamental understanding of refrigeration cycles and safety
- b) Students will gain a fundamental understanding of electrical circuits and controls and safety
- c) Students will become Environmental Protection Agency (EPA) certified

11. Curriculum Review and Student Learning Outcomes Assessment

All courses in the program should be listed here, along with information on how current the course outline is and the status on SLO writing and assessment.

Course Number	Course Name	Last Reviewed by Curriculum Committee	*Date for next revision (six year cycle)	Date Last Offered	SLO's Written	**Most Recent SLO's Assessed	
HEAT 170	Air Conditioning I	Sum 2006	2015	Fall 09	Yes	Fall 2009	
HEAT 180	Air Conditioning II	Fall 2009		Fall 09	Yes	Fall 2009	
HEAT 182	Heating - Electrical and Gas	Fall 2009		Spr 09	Yes	Fall 2009	
HEAT 184	Electricity for Heating and A/C	Fall 2009		Smr 09	Yes	Fall 2009	
HEAT 186	Control Systems	Sum 2006		Fall 08	Yes	Fall 2009	
HEAT 188	Trouble Shooting Heating A/C	Fall 2006		Spr 08*	Yes	Fall 2009	
HEAT698A	Cooperative Education	Fall 2009			Yes	Fall 2009	
HEAT698B	Cooperative Education	Fall 2009			Coop Ed	Yes	
HEAT698C	Cooperative Education	Fall 2009			offered	Yes	
HEAT698D	Cooperative Education	Fall 2009			at	Yes	
HEAT699A	Cooperative Education	Fall 2009			student	Yes	
HEAT699B	Cooperative Education	Fall 2009			request	Yes	
HEAT699C	Cooperative Education	Fall 2009				Yes	
HEAT699D	Cooperative Education	Fall 2009			*188	Yes	
		Coop Template reviewed 09			cancelled Fall 09 due to budget		

*Courses to be reviewed on a six year cycle per Title 5.

**Results of assessment maintained by faculty with impact or needs recorded on annual program review report.

12. Degree/Certificate Review

All degrees and certificates in the program should be listed here, along with information regarding time to completion, course access/availability, SLO status, assessment status, and date of last review and revision. Attach a degree/certificate “map” that shows the planned progressive sequence of courses by semester as applicable to an on-level student entering in the fall semester and attending full-time (whenever possible). Include all mandatory and recommended/silent prerequisites in the map.

Heating and Air Conditioning has one Certificate of Achievement which requires six classes. Since only evening classes are offered in this program and most students are employed during the day, the typical student takes one or two classes each semester. This would make finishing the Certificate in three or four semesters feasible. Students begin in the Air Conditioning I class and continue in a sequence that the rotation of classes and their schedule permits. Trouble-Shooting for Heating and Air Conditioning is the capstone class for most students. Class offerings are rotated in a manner that permits reasonable access to all of the Heating and Air Conditioning courses.

Curriculum for the Heating and Air Conditioning program is reviewed annually by the Advisory Council. Employers and faculty make any necessary recommendations to revise the Certificate requirements and electives to best meet the needs of the industry. When the new HEAT 175 Basic Electrical class is developed and approved, it will be inserted into the Certificate requirements. All courses included Student Learning Outcomes and the program has Student Learning Outcomes. Assessment matrices are being developed by faculty, with several already in place and reviewed by the Advisory Council. Plans are being discussed to align the Heating and Air Conditioning program with the new Baldwin Park Adult School, which will be opening a new Heating and Air Conditioning facility by 2011. This may include the offering of Citrus College credit classes at the new facility, in order to bridge the Adult School students into the College credit program in Heating and Air Conditioning.

Degree or Certificate Title	Date last reviewed by Curriculum	Average number of awards each year	Date SLOs written	Date SLOs Assessed	Date last reviewed by Advisory Council
Heating & Air Conditioning Certificate of Achievement	Fall 2009	2	May 2008	SLO Assessment Matrices Being Created by Faculty	10-15-09

13. Evaluation Criteria – Mission

The Heating and Air Conditioning program meets the District's mission by delivering high quality instruction that empowers students to compete globally and to contribute to the economic growth of today's society. The program supports student success in pursuit of academic excellence, economic opportunity, and personal achievement.

The Heating and Air Conditioning program meets the established core competencies through its program Student Learning Outcomes.

The program has an extremely high percentage of male students; and consistently, approximately 50% of the students are Hispanic. The highest numbers of students are in the 20-24 age range, followed closely by the 40-49 year olds. The primary educational goal was Certificate until 2007, when the primary goal shifted to job skills.

The fill rate in the Spring 2009 semester was 107.8% and course retention was 98.9%. The student success rate has risen to 73%.

Commendations

a) None

Previous Recommendations Completed

a) None

Recommendations - none

14. Evaluation Criteria – Need

The need for the Heating and Air Conditioning program is validated annually through labor market data, enrollment trends, and feedback from employers on the Advisory Council. Core Indicators for TOP Code 0946.00 Environmental Control Technology show data in five areas for the Citrus College Heating and Air Conditioning program. The Core Indicators only count concentrators in a program who have taken several classes within the TOP code. The Heating and Air Conditioning students show 100% skill attainment and 33% persistence to the sequential classes. The employment rate for our Heating and Air Conditioning students is 100%. Nontraditional participation is only 1.2% females, with no nontraditional completers of a Certificate or Degree in Heating and Air Conditioning.

In addition to the program at Citrus College, Heating / Ventilation and Air Conditioning (HVAC) programs are offered at five other colleges in Los Angeles and Orange counties: El Camino, Trade Tech, Mt. SAC, Cypress, and Orange Coast. The closest college is Mt. SAC, with two full-time faculty and a full day-time schedule in addition to their evening program.

Recommendation Hire a full-time faculty position in the Public Services Department to provide technical leadership, curriculum development, and representation on committees								
				Impact				
Action/Activities	Target Date	Person Responsible	FNIC	Facilities	Software	Equipment	Personnel	Other
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

15. Evaluation Criteria – Quality

Curriculum for the Heating and Air Conditioning program is reviewed annually by the Advisory Council. All courses have Student Learning Outcomes and the program has Student Learning Outcomes. Assessment matrices are being developed by faculty, with several already in place and reviewed by the Advisory Council. Critical thinking, problem solving, and written assignments are an important part of each course and lab. Faculty meet the criteria for vocational education instruction. Since there are no full-time faculty in this department, staff development is not available through the district, and adjunct are generally not able to allocate time. Grants are sometimes able to support travel and stipends for adjunct faculty. A full-time faculty member in the Public Services Department would benefit the overall outcomes by providing continuity, committee representation on campus, and curriculum development. Student success rates have risen to 73%.

The Core Indicators only count concentrators in a program who have taken several classes within the TOP code. The Heating and Air Conditioning students show 100% skill attainment and 33% persistence to the sequential classes. The employment rate for our Heating and Air Conditioning students is 100%. Nontraditional participation is only 1.2% females, with no nontraditional completers of a Certificate or Degree in Heating and Air Conditioning.

Commendations

- a) This curriculum is regularly reviewed and updated with Advisory Council and adjunct faculty in order to meet current industry needs.

Previous Recommendations Completed

- a) "Coursework in sales for the industry could provide an excellent bridge into other relevant careers." This recommendation has been reviewed annually, and is no longer slated for implementation. The Advisory Council feels that coursework should focus on the development of technicians and that some completers with ability and interest will be drawn to the sales side of the industry.

Recommendations

Recommendation Add a new class, HEAT 175 Basic Electrical, as a prerequisite for HEAT 184 Electricity for Heating and Air Conditioning									
				Impact					
Action/Activities	Target Date	Person Responsible	FNIC	Facilities	Software	Equipment	Personnel	Other	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Recommendation Add a safety statement to all syllabi									
				Impact					
Action/Activities	Target Date	Person Responsible	FNIC	Facilities	Software	Equipment	Personnel	Other	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Recommendation Reduce the number of Student Learning Outcomes in courses and for the program									
				Impact					
Action/Activities	Target Date	Person Responsible	FNIC	Facilities	Software	Equipment	Personnel	Other	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

16. Evaluation Criteria – Feasibility

At this time, classes are rotated and scheduled so that students can complete the courses necessary for the Certificate of Achievement in two years or less. A part-time counselor has been hired with VTEA funding to focus on career and technical program student success. She is available to see students in the Heating and Air Conditioning programs.

Facilities for the Heating and Air Conditioning program are satisfactory for the lecture portion of the curriculum, but not for the lab coursework. Alternative locations are being explored and some grant funding has been accessed to provide equipment and supplies beyond the limited district budget for this program.

Commendations

- a) Counselor tracking of student progress will increase Certificate of Achievement awards.

- b) Despite a reduction in course offerings due to the budget, scheduling still allows students to complete the Heating and Air Conditioning Certificate of Achievement in two years.

Previous Recommendations Completed

- a) Tech D, the building in which all the Heating and Air Conditioning classes and labs are held, lacks a proper air conditioning and heating system, which can make learning challenging in the summer and winter. Temperature control in these rooms would provide a more appropriate learning environment. However, this building is scheduled for demolition when the new Technology building is approved.

Plans for a new Heating and Air Conditioning lab in the Technology E building were cancelled. Heating and Air Conditioning classes and labs have been held in the Diesel Technology building. When the Technology E building opened, lecture space was made available to the Heating and Air Conditioning faculty. However, the lab continues to be inadequate due to space, room temperature control, and technology access. Alternative locations both on campus and off campus are being considered.

Recommendations

Recommendation								
The lab facility for the program lacks proper air conditioning and heating, sound abatement, and instructional technology. An appropriate facility needs to be identified so that students can learn in a professional environment.								
			Impact					
Action/Activities	Target Date	Person Responsible	FNIC	Facilities	Software	Equipment	Personnel	Other
			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Evaluation Criteria – Compliance

Course requisites and course outlines of record meet state, district, and federal requirements. The Heating and Air Conditioning Advisory Council meets regularly and minutes are attached to this program review.

Commendations

- a) Program faculty proctor the Environmental Protection Agency exam so that students are eligible for employment.

Previous Recommendations Completed

- a) None

Recommendations - none

18. Evaluation Criteria – Other

none

19. Attachment A: Curriculum Course Outlines of Record

20. Attachment B: Catalog Pages & Sample Syllabi

21. Attachment C: Library Resources Report

22. Attachment D: Articulation Status

23. Attachment E: Academic Senate Checklist

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25. Attachment G: Other