PROGRAM APPROVAL DOCUMENT (PAD)

Program Name: Heating, Ventilation, Air Conditioning - Refrigeration (HVAC-R) – Industrial **Program Code:**

Division: HAT **Department:** WAFD **CIP Code:**

Type of Award: ☐ A.A. ☐ A.S. ☐ A.A.S. ☐ Certificate ☐ Certificate of Completion ☒ Advanced Certificate ☐ Post/Cert

Is this an occupational program eligible for Perkins Funding? ☒ yes ☐ no **Effective Year:** Fall 2003

HVAC Residential Certificate and AS Degree programs are Perkins Approved.

Program Features

Provide a general description of the program's purpose and general goals. State the criteria for entry into the program, along with projected enrollment figures. Explain any connection to other WCC programs, as well as accrediting agencies or professional organizations. Note any special features of the program, such as jobs for which the student will be prepared, as well as potential career paths.

This program is a capstone to the HVACR-Residential Certificate. It provides industry recognized certification for entry-level employment in the industrial heating, ventilation, and air-conditioning sector. The additional theory and hands-on experience gained in the Advanced Certificate program provides students with the skills needed to size, layout, install, maintain, and troubleshoot HVACR equipment found in large buildings, industrial complexes, power plants, and other industrial settings.

Enrollment is projected at 20 students per year.

Accrediting agencies or professional organizations include:

- Partnership for Air-Conditioning, Heating, Refrigeration Accreditation (PAHRA)
- Heating, Ventilation and Air-Conditioning Excellence (HVAC Excellence)
- Council of Air-Conditioning and Refrigeration Educators (CARE)
- North American Technician Excellence (NATE)

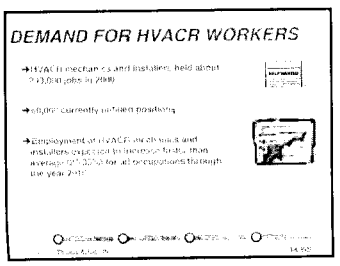
Need

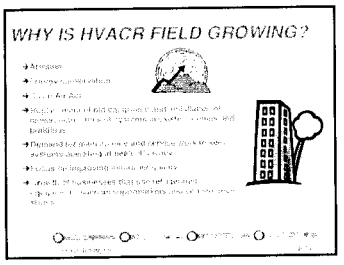
State the need for the program and provide evidence to support the stated need.

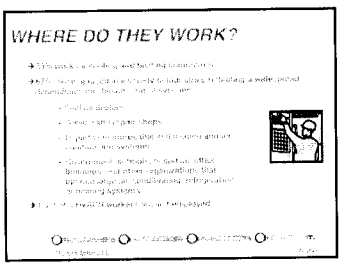
DEMAND FOR HVACR GRADUATES

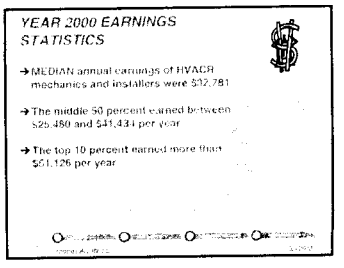
http://www.michlmi.org/LMI/occ_proj/occ_cnty.htm

			YEAR				
	OES CODE	OCCUPATION	1998	2008	Level	%	TOTAL
Washtenaw Economic Forecast Region	85902	Heat/AC/Refrig Mechns/Instllrs	525	705	180	33.8	28
Michigan statewide	85902	Heat/AC/Refrig Mechns/Instllrs	9060	10880	1820	20.2	350









Outcomes
State the overall knowledge to be gained, skills to be learned, and attitudes to be developed by students who participate in this program.
At the completion of the program the student will be able to size, layout, install, maintain, and troubleshoot HVACR equipment found in small office buildings, schools, supermarkets, and other light commercial settings.

Curriculum
List the sequence of courses in the program, including credit hours, contact hours, and co- and pre-requisites.

Subject/ Course #	Title	Credit Hours	Contact Hours					Pre-requisites/ Co-requisites
			total	lecture	Lab	Clinic	other	
HVAC-R	HVAC-R CTHVAC Certificate	25	540					
HVA 201	Energy Audits	3	60	30	30			CTHVAC Certificate
HVA 202	Air System Layout Design	3	60	30	30			CTHVAC Certificate
HVA 204	Central Heating Plants	3	60	30	30			CTHVAC Certificate
HVA 206	Central Cooling Plants	3	60	30	30			CTHVAC Certificate
HVA 207	C/IS with Industrial ICE	3	60	30	30			HVA 201, 202, 203 and 205
	Totals	**40**	**840**	**150**	**150**			

Credits required to complete the program: 40

Assessment
Describe the assessment process that will be used to determine the effectiveness of the program.

- Program accreditation
- Commercial Industry Competency (C/IS) Exam

Budget
Specify program costs in the following areas, per academic year, including any start-up costs: faculty, training, travel, materials, resources, facilities, equipment, and any other costs.

Current staffing (one full-time faculty)/Equipment (Hampden Trainers, etc. . . .)/Space (OE 101 classroom, 108 computer lab, 109 HVACR and 111 Sheet Metal Lab(s) are adequate. WAF 104: Soldering & Brazing uses the current welding lab (OE 141.)

Approval Recommended:	Print Name	Signature	Date
Program Initiator:	Thomas Achatz		
Dept. Chair/Director:	William Figg		3/28/03
Dean/Administrator:	Granville Lee		3/28/03
VP of Instruction:	Roger Palay		3/28/03
President:	Larry Whitworth		4/1/03

Date of Board Approval:

Heating, Ventilation, Air Conditioning-Refrigeration (HVAC-R) Program(s)

REVISED

Certificate

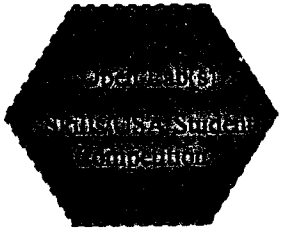
HVAC-Residential Certificate (CTHVAC):
HVA 101: HVAC I (4/90)
- *Introduction to HVAC*

(***Changed/TRI 103***) HVA 102: Sheet Metal Fabrication (4/60)
HVA 103: HVAC II (4/90)
- *HVAC Circuit sand Thermodynamics, Heat Transfer, and Psychrometrics*

WAF 104: Soldering & Brazing (2/60)
HVA 105: HVAC III (4/90)
- *Heating Systems and Cooling Systems*

HVA 107: HVAC IV (4/90)
- *HVAC Loads and HVAC Controls*

(***New***) HVA 108: HVAC V: C/IS with EPA 608, Residential ICE, and HVAC Excellence (3/60)
Total Credit Hours = 25 Contact Hours = 540



NEW

Advanced Certificate(s)

Advanced Certificate Core Classes:
Complete HVAC-Residential Certificate (CTHVAC) (25/540)
HVA 201: Energy Audits (3/60)
HVA 202: Air System Layout/Design (3/60)

NEW

HVAC-R: Commercial Advanced Certificate (XXXX):
Complete Advanced Certificate Core Classes (31/660)
HVA 203: Refrigeration Systems (3/60)
HVA 205: Hydronic Systems (3/60)
HVA 207: C/IS with Commercial ICE (3/60)
Total Credit Hours = 40 Contact Hours = 840

HVAC-R: Industrial Advanced Certificate (YYYY):
Complete Advanced Certificate Core Classes (31/660)
HVA 204: Central Heating Plants (3/60)
HVA 206: Central Cooling Plants (3/60)
HVA 208: C/IS with Industrial ICE (3/60)
Total Credit Hours = 40 Contact Hours = 840

Reactivated/ Revised

Degree Options

AAS Occupational Studies – HVAC-R (APOST):
1. Complete (CTVAC) Certificate 25
2. Complete Gen Ed 18-21
3. Complete an additional OccEd credits 14-17

Minimum Credits AAS Occ Studies: HVAC-R . . 60

AS HVAC-R Technology (RAC)
1. Complete (CTVAC) Certificate 25
2. Complete HVAC-R Advanced Certificate 15
3. *Math 151/152 Tech Algebra/Geometry & Trig. . . . 8*
4. Complete Gen Ed Transfer Courses 19-21

Minimum Credits AS HVAC-R Technology 67

HEATING VENTILATION AIR-CONDITIONING REFRIGERATION

Thomas Achatz, PE, Program Advisor

3/27/2003 6:39:18 PM

Washtenaw Community College

PRELIMINARY PROGRAM APPROVAL FORM (PPAF)

Proposed name of program: Heating, Ventilation, Air-conditioning, - Refrigeration (HVAC-R) - Industrial

Faculty/initiator(s): Thomas Achatz

Division: HAT **Department:** WAFD **Estimated start-up term:** Fall 2003

Type of program: ☐ A.A. ☐ A.S. ☐ A.A.S. ☐ Certificate of Completion ☐ Certificate ☒ Advanced Certificate ☐ Post Associate Certificate

Describe the program briefly, including the need for the program and the benefits it will offer to students.
This program is a capstone to the HVAC-Residential Certificate. It provides industry recognized certification for entry-level employment in the industrial heating, ventilation, and air-conditioning sector. The additional theory and hands-on experience gained in the Advanced Certificate program provides students with the skills needed to size, layout, install, maintain, and troubleshoot HVACR equipment found in large buildings, industrial complexes, power plants, and other industrial settings.

Identify the resources (faculty, facilities, equipment) that will be needed to start and to maintain the program.
Current staffing (one full-time faculty)/Equipment (Hampden Trainers, etc. . . .)/Space (OE 101 classroom, 108 computer lab, 109 HVACR and 111 Sheet Metal Lab(s) are adequate. WAF 104: Soldering & Brazing uses the current welding lab (OE 141.)

List the courses that the progam will require.

Existing	Need modification	New
	Completion of HVAC – Residential Certificate (CTHVAC) (25/540)	HVA 201: Energy Audits (3/60)
		HVA 202: Air System Layout Design (3/60)
		HVA 204: Central Heating Plants (3/60)
		HVA 206: Central Cooling Plants (3/60)
		HVA 208: C/IS with Industrial ICE (3/60)

Signatures:
Department Chair/Director: _____ Date: _____

Dean(s)/Administrator: _____ Date: 3/28/03

Executive Vice President of Instruction:
☑ Approved for development of PAD (Program Approval Document)
☐ Returned for additional review/development of PPAF (details attached)
☐ Not approved
Signature: _____ Date: 3/28/03