

PROGRAM CHANGE FORM

Program Code: Program Name:

CVHVAIHeating Ventilation, Air Conditioning, and Refrigeration – Industrial

Effective Term:

Fall 2004**Directions:**

1. Attach the current program listing from the WCC catalog and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Course Syllabus Form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☐ Remove _____ course(s)
- ☐ Add _____ course(s)
- ☐ Total credits: Current credits _____ After changes _____
- ☐ Title (title was _____)
- ☐ Description

- ☒ Advisors William Figg ~~Ralph Hargrave~~ and Les Pullins
- ☐ Articulation information
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes
- Other _____

Show all changes on the attached page from the catalog.

Rationale for proposed changes:

Reflect change in faculty responsibility.

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding the use of this program.

N/A

Signatures:

Reviewer	Print Name	Signature	Date
Program Change Initiator	Les Pullins	<i>Les Pullins</i>	9/9/04
Department Chair	Bill Figg	<i>William Figg</i>	9-9-04
Division Dean/Administrator	Granville Lee	<i>Granville Lee</i>	9/9/04
Vice President for Instruction	Roger Palay	<i>Roger M. Palay</i>	9/13/04

Please submit completed form to the Office of Curriculum and Articulation Services.

Office of Curriculum & Articulation Services

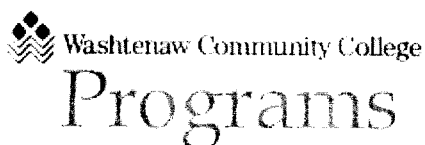
Program Change Form 8-2003

Access Program File _____

Log _____

Copied and Returned _____

[About WCC](#)
[Current Students](#)
[Prospective Students](#)
[Continuing Education](#)
[Employers](#)
[Calendar](#)
[College Resources](#)
[Search & Directory](#)
[Home](#)



[Programs Home](#) |
 [A to Z List of Programs](#) |
 [Career Areas/Paths](#)

Programs: Heating, Ventilation, Air Conditioning, and Refrigeration - Industrial (CVHVAI)

Advanced Certificate

Program requirements shown below are for catalog year: 2004 - 2005

[Change Year](#)

Description: This program is a capstone to HVAC-Residential Certification, and is designed for students who wish to develop skills in HVACR mechanics or installation. It prepares the student for industry-recognized certification (Commercial Industry Competency Exam) for entry-level employment in industrial heating, ventilation and air conditioning. This program is designed to provide the student with theoretical and practical experiences in HVACR at the industrial level. Through intensive hands-on experiences, the student will develop knowledge and skills in sizing, layout, installation, maintenance, and trouble shooting HAVCR equipment found in large buildings, industrial complexes, power plants, and other industrial settings.

Division: Health and Applied Technologies

Department: Welding and Fabrication

Advisors: Thomas Achatz

Les Pullins

Admission Requirements:

Students must complete the Heating, Ventilation, Air Conditioning and Refrigeration Residential program (CTHVAC).

Core Courses

(6 Credits)

HVA 201	Energy Audits	3
HVA 202	Air System Layout and Design	3

Major/Area Requirements

(9 Credits)

HVA 204	Central Heating Plants	3
HVA 206	Central Cooling Plants	3
HVA 208	Codes and Industry Standards with Industrial ICE	3

Total Credits Required for the Program:

15 Credits

Additional Information:

Related Web Sites: This website is for informational purposes only and is not to be construed as a binding offer or contract between WCC and the student. The information presented here is believed accurate, but is NOT guaranteed and is subject to

Heating, Ventilation, Air Conditioning, and Refrigeration - Industrial (CVHVAI)

Advanced Certificate

Program Effective Term: Fall 2004

This program is a capstone to HAVAC-Residential Certification, and is designed for students who wish to develop skills in HAVCR mechanics or installation. It prepares the student for industry-recognized certification (Commercial Industry Competency Exam) for entry-level employment in industrial heating, ventilation and air conditioning. This program is designed to provide the student with theoretical and practical experiences in HVACR at the industrial level. Through intensive hands-on experiences, the student will develop knowledge and skills in sizing, layout, installation, maintenance, and trouble shooting HAVCR equipment found in large buildings, industrial complexes, power plants, and other industrial settings.

Program Admission Requirements:

Students must complete the Heating, Ventilation, Air Conditioning and Refrigeration Residential program (CTHVAC).

Core Courses (6 credits)

HVA 201	Energy Audits	3
HVA 202	Air System Layout and Design	3

Major/Area Requirements (9 credits)

HVA 204	Central Heating Plants	3
HVA 206	Central Cooling Plants	3
HVA 208	Codes and Industry Standards with Industrial ICE	3

Minimum Credits Required for the Program: 15

Welding

Heating, Ventilation, Air Conditioning and Refrigeration -
Industrial (CVHVAI)

'UNDER CONSTRUCTION'

Advanced Certificate

Program Effective Term: Fall 2003

Health and Applied Technologies Division

Welding and Fabrication Department

Advisor:

Program Admission Requirements:

Students must complete the Heating, Ventilation, Air Conditioning and Refrigeration Residential program (CTHVAC).

Core Courses

(6 Credits)

HVA 201	Energy Audits	3
HVA 202	Air System Layout and Design	3

Major/Area Requirements

(9 Credits)

HVA 204	Central Heating Plants	3
HVA 206	Central Cooling Plants	3
HVA 208	Codes and Industry Standards with Industrial ICE	3

Concentration/Options:

Minimum Credits Required for the Program:

15

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

	OES CODE	OCCUPATION	YEAR		Level	%	TOTAL
			1998	2008			
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


DEMAND FOR HVACR WORKERS

- HVAC mechanics and installers held almost 13,000 jobs in 2000.
- Region currently in labor shortage.
- Employment of HVAC mechanics and installers expected to increase faster than average (27% 2002) for all occupations through the year 2011.




WHY IS HVACR FIELD GROWING?

- Air conditioning
- Energy conservation
- Green buildings
- Demand for more energy and comfort systems in new and existing buildings
- Demand for more energy and comfort systems in new and existing buildings
- Demand for more energy and comfort systems in new and existing buildings
- Demand for more energy and comfort systems in new and existing buildings




WHERE DO THEY WORK?

- 50% work in manufacturing and building construction
- 40% work in service industries including a wide range of businesses from food service to health care
- 10% work in government
- 10% work in education
- 10% work in health care
- 10% work in other industries



YEAR 2000 EARNINGS STATISTICS

- MEDIAN annual earnings of HVACR mechanics and installers were \$32,781
- The middle 50 percent earned between \$26,480 and \$41,431 per year
- The top 10 percent earned more than \$61,126 per year



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 AchatzDept. Chair/Director: William FiggDean/Administrator: Granville LeeVP of Instruction: Roger PalayPresident: Larry Whitworth

Date of Board Approval: _____

William H. Figg
Granville Lee
Roger M. Palay
Larry Whitworth

3/28/03
3/28/03
3/28/03
4/1/03

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

REVISED

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 and 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



Certificate

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

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

Revised/Revised



HEATING

VENTILATION

AIR-CONDITIONING

REFRIGERATION

Thomas Achatz, PE, Program Advisor

3/27/2003 6:39:18 PM

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 program 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)

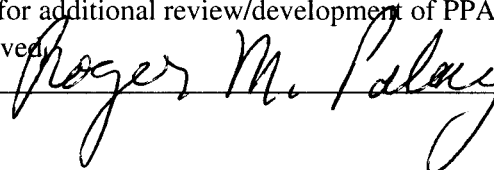
Signatures:

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