

PROGRAM CHANGE FORM

Program Code: Program Name:

Effective Term:

CVHVAM Heating Ventilation, Air Conditioning, and Refrigeration - Commercial

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:

- | | |
|---|---|
| <input type="checkbox"/> Remove _____ course(s) | <input checked="" type="checkbox"/> Advisors <u>William Figg</u>
Ralph Hargrave and Les Pullins |
| <input type="checkbox"/> Add _____ course(s) | <input type="checkbox"/> Articulation information |
| <input type="checkbox"/> Total credits: Current credits _____ After changes _____ | <input type="checkbox"/> Program admission requirements |
| <input type="checkbox"/> Title (title was _____) | <input type="checkbox"/> Continuing eligibility requirements |
| <input type="checkbox"/> Description | <input type="checkbox"/> 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

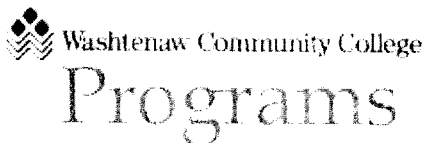
List departments that have been consulted regarding the use of this program.

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.



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

Programs: Heating, Ventilation, Air Conditioning, and Refrigeration - Commercial (CVHVAM)

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 (C/IS) for entry-level employment in commercial heating, ventilation and air conditioning. Additional theory and hands-on experience will increase students' knowledge base concerning HVACR systems at the commercial level. The student will develop knowledge and skills in sizing, layout, installation, maintenance, and trouble shooting HVACR equipment found in small office buildings, schools, supermarkets, and other light commercial settings.

Division: Health and Applied Technologies

Department: Welding and Fabrication

Advisors: ~~Thomas Acharz~~ Les POLLINS

Admission Requirements:

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

*Alisa Franklin De Sant
these 4 me*

Tom R...

Core Courses

HVA 201	Energy Audits	(6 Credits)
		3
HVA 202	Air System Layout and Design	3

Major/Area Requirements

HVA 203	Refrigeration Systems	(9 Credits)
		3
HVA 205	Hydronic Systems	3
HVA 207	Codes and Industry Standards with Commercial 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 change without notice.

Heating, Ventilation, Air Conditioning, and Refrigeration - Commercial (CVHVAM)

Advanced Certificate

Program Effective Term: Fall 2004

This program is a capstone to HVAC-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 (C/IS) for entry-level employment in commercial heating, ventilation and air conditioning. Additional theory and hands-on experience will increase students' knowledge base concerning HVACR systems at the commercial level. The student will develop knowledge and skills in sizing, layout, installation, maintenance, and trouble shooting HAVCR equipment found in small office buildings, schools, supermarkets, and other light commercial 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 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	3
HVA 207	Codes and Industry Standards with Commercial ICE	3

Minimum Credits Required for the Program: 15

Welding

Heating, Ventilation, Air Conditioning and Refrigeration - Commercial (CVHVAC) Advanced Certificate

'UNDER CONSTRUCTION'

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 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	3
HVA 207	Codes and Industry Standards with Commercial ICE	3

Concentration/Options:

Minimum Credits Required for the Program: 15

PROGRAM APPROVAL DOCUMENT (PAD)

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

The HVAC-R – Commercial **Advanced Certificate** is a capstone to the HVAC-Residential Certificate. It provides industry recognized certification for entry-level employment in the commercial 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 small office buildings, schools, supermarkets, and other light commercial 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
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

- HVACR mechanics and installers are in demand (2003-2012)
- High demand for HVACR workers in the construction industry
- High demand for HVACR workers in the manufacturing industry

WHY IS HVACR FIELD GROWING?

- Aging population
- New construction
- Increased demand for energy-efficient buildings
- Increased demand for energy-efficient buildings
- Increased demand for energy-efficient buildings

WHERE DO THEY WORK?

- Residential
- Commercial
- Industrial
- Government
- Education
- Healthcare
- Retail
- Manufacturing
- Transportation
- Agriculture
- Construction
- Maintenance
- Installation
- Repair
- Inspection
- Training
- Research
- Development
- Testing
- Evaluation
- Analysis
- Design
- Planning
- Management
- Supervision
- Coordination
- Collaboration
- Communication
- Teamwork
- Problem-solving
- Decision-making
- Leadership
- Innovation
- Creativity
- Initiative
- Responsibility
- Accountability
- Integrity
- Honesty
- Transparency
- Openness
- Inclusivity
- Diversity
- Equity
- Fairness
- Justice
- Equality
- Freedom
- Democracy
- Rule of Law
- Human Rights
- Environmental Protection
- Social Justice
- Economic Stability
- Financial Security
- Energy Efficiency
- Sustainability
- Resilience
- Adaptability
- Flexibility
- Agility
- Innovation
- Creativity
- Initiative
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- Environmental Protection
- Social Justice
- Economic Stability
- Financial Security
- Energy Efficiency
- Sustainability
- Resilience
- Adaptability
- Flexibility
- Agility

YEAR 2000 EARNINGS STATISTICS

- Median annual earnings of HVACR mechanics and installers were \$32,751
- The middle 50 percent earned between \$29,480 and \$41,434 per year
- The top 10 percent earned more than \$41,126 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 203	Refrigeration Systems	3	60	30	30			CTHVAC Certificate
HVA 205	Hydronic Systems	3	60	30	30			CTHVAC Certificate
HVA 207	C/IS with Commercial 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

Dean/Administrator: Granville Lee

VP of Instruction: Roger Palay

President: Larry Whitworth

Date of Board Approval: _____

William Figg 3/28/03
Granville Lee 3/28/03
Roger M. Palay 3/28/03
Larry Whitworth 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 Core Classes:

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

NEW

Advanced Certificate(s)

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

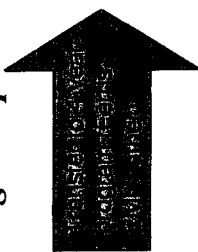
AAS Occupational Studies – HVAC-R (APOST):

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

RECEIVED



RECEIVED/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, and Refrigeration (HVACR) - Commercial

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 [x] 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 HVACR-Residential Certificate. It provides industry recognized certification for entry-level employment in the commercial 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 small office buildings, schools, supermarkets, and other light commercial 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.

Table with 3 columns: Existing, Need modification, New. Rows list course requirements like HVA 201: Energy Audits (3/60), HVA 202: Air System Layout Design (3/60), etc.

Signatures: Department Chair/Director: TA William A. [Signature] Date: 3-3-03

Dean(s)/Administrator: [Signature] Date: 3/3/03

Vice President of Instruction: [x] Approved for development of PAD (Program Approval Document) [] Returned for additional review/development of PPAF (details attached) [] Not approved Signature: Roger M. Polay Date: 3/28/03