

## Program Information Report

### Skilled Trades

#### Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

##### Associate in Applied Science Degree

**Program Effective Term: Fall 2024**

**High Demand Occupation   High Skill Occupation   High Wage Occupation**

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

##### **Articulation:**

Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: <https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php>.

<b>First Semester</b>		<b>(13 credits)</b>
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 103	Heating, Ventilation and Air Conditioning II	4
WAF 104	Soldering and Brazing	2
Elective	Math Elective(s)	3
<b>Second Semester</b>		<b>(14 credits)</b>
HVA 102	HVAC Sheet Metal Fabrication	3
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
Elective	Writing Elective(s)	3
<b>Third Semester</b>		<b>(6 credits)</b>
HVA 108	Residential HVAC Competency Exams and Codes	3
Elective	Speech/Comp. Elective(s)	3
<b>Fourth Semester</b>		<b>(14 credits)</b>
HVA 201	Energy Audits	4
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
Elective	Nat. Sci. Elective(s)	3
<b>Fifth Semester</b>		<b>(13 credits)</b>
HVA 202	Air System Layout and Design	3
HVA 207	Commercial Industry Standards with Competency Exams	3
Elective	Soc. Sci. Elective(s)	3
Elective	Arts/Human. Elective(s)	3
Elective	Open elective(s) to reach a minimum of 60 total credits.	1

**Minimum Credits Required for the Program: 60**

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

<b>Program Code:</b> APHVCR	<b>Current Program Name:</b> Heating, Ventilation, AC and Refrigeration	<b>Effective Term:</b> Fall 2024
<b>Division Code:</b> ATP	<b>Department:</b> HVAD	

**Directions:**

1. Attach the current program listing from the WCC catalog or website 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 CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a [Program Assessment Plan Change](#) form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the [Curriculum and Assessment Program Information page](#).

**Requested Changes:**

- |  |   |
|--|---|
| <input type="checkbox"/> Remove course(s): _____             | <input type="checkbox"/> Program outcomes (may also result from removing or adding a course)* |
| <input type="checkbox"/> Add course(s): _____                | <input type="checkbox"/> Program assessment plan*   |
| <input type="checkbox"/> Program title (new title is _____)  | <input type="checkbox"/> Accreditation information  |
| <input type="checkbox"/> Description                         | <input checked="" type="checkbox"/> Other <u>Layout changes</u> _____                         |
| <input type="checkbox"/> Advisors                            |   |
| <input type="checkbox"/> Program admission requirements      |   |
| <input type="checkbox"/> Continuing eligibility requirements |   |

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

Show all changes on the catalog page you attach.

\* Please submit a [Program Assessment Plan Change](#) form.

**Rationale for proposed changes:**

Division is updating layouts to align with forthcoming part-time layouts


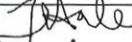

**Financial/staffing/equipment/space implications:**

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

**Signatures:**

Reviewer	Print Name	Signature	Date
Initiator	Brian Martindale	"/s/ Brian Martindale"	1/8/24
Department Chair	Brian Martindale	"/s/ Brian Martindale"	1/8/24
Division Dean/Administrator	Jimmie Baber	<i>Jimmie Baber</i>	1/8/2024
<b>Please return completed form to the Office of Curriculum &amp; Assessment, SC 257</b> <b>or by e-mail to curriculum.assessment@wccnet.edu</b> <b>Once reviewed by the appropriate faculty committees we will secure the signature of the VPI.</b>			
Reviewer	Print Name	Signature	Date

PROGRAM CHANGE FORM

Curriculum Committee Chair	Randy Van Wagnen		2/15/24
Assessment Committee Chair	Jessica Hale		2/16/24
Interim Vice President for Instruction	Brandon Tucker		2/17/24

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**WCC General Education Requirements**  
Effective Fall 2018

Associate degree programs were updated to meet the revised WCC general education requirements below.

**Course Distribution Requirements**

Associate degree students must complete courses from each of six General Education content areas. The requirements vary, depending on which degree is being earned. The number of general education credit hours required for each degree is as follows.

	AA	AS	AAS
Writing/Composition	3-4 credits	3-4 credits	3-4 credits
2nd Writing/Composition or Communication	3-4 credits	3 credits	3 credits
Mathematics	3-4 credits	3-4 credits	3-4 credits
Natural Sciences <sup>1</sup>	7-8 credits	7-8 credits	3-4 credits
Social & Behavioral Science <sup>2</sup>	6 credits	6 credits	3 credits
Arts and Humanities <sup>3</sup>	6 credits	6 credits	3 credits
General Education Electives to reach 30 credits	0-2 credits	0-2 credits	N/A
Minimum	30 credits	30 credits	18 credits

<sup>1</sup> Two courses in Natural Science including one with laboratory experience (from two disciplines)

<sup>2</sup> From two disciplines

<sup>3</sup> From two disciplines

**Program Information Report**

**Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)**

**Associate in Applied Science Degree**

**Program Effective Term: Fall 2018**

**High Demand Occupation High Skill Occupation High Wage Occupation**

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**Articulation:**

Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: <http://www.wccnet.edu/curriculum/articulation/levelone/colleges/>.

<b>First Semester</b>		<b>(15 credits)</b>
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation and Air Conditioning II	4
	Math Elective(s)	3
<b>Second Semester</b>		<b>(13 credits)</b>
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 202	Air System Layout and Design	3
WAF 104	Soldering and Brazing	2
<b>Third Semester</b>		<b>(9 credits)</b>
HVA 108	Residential HVAC Competency Exams and Codes	3
	Arts/Human. Elective(s)	3
	Writing Elective(s)	3
<b>Fourth Semester</b>		<b>(14 credits)</b>
HVA 201	Energy Audits	4
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
	Nat. Sci. Elective(s)	3
<b>Fifth Semester</b>		<b>(9 credits)</b>
HVA 207	Commercial Industry Standards with Competency Exams	3
	Soc. Sci. Elective(s)	3
	Speech/Comp. Elective(s) 2	3

**Minimum Credits Required for the Program: 60**

Done 1/22/18  
NW

**WASHTENAW COMMUNITY COLLEGE**  
**GENERAL EDUCATION REVISION AAS PROGRAM CHANGE FORM 2018-2019**

Program Code: <b>APHVCR</b>	Program Name: <b>Heating, Ventilation, Air Conditioning + Refrigeration</b>
Division Code: <b>ATP</b>	Department: <b>HVAC</b>

This form is to be used only for General Education Revision Program Changes for Associate in Applied Science (AAS) programs. Any other program changes should be submitted separately using a standard Program Change Form.

**Directions:**

- Review each general education area under **Requested Changes** below and respond as needed.
- Attach the semester program layout showing the current program listing from the WCC catalog.
  - Indicate any changes to be made on the semester layout.
  - Draw a line through any courses that should be removed on the semester layout.
  - Write in any courses that need to be added on the semester layout.
- Submit this form and semester program layout to the Office of Curriculum and Assessment (SC 257).

Current General Education Requirements AAS		Revised General Education Requirements 2018-2019 AAS	
Writing	3-4 credits	English Composition	3 - 4 credits
Speech	3 credits	2 <sup>nd</sup> Course in English Composition or one course in Communication	3 - 4 credits
Mathematics	3 - 4 credits	Mathematics	3 - 4 credits
Natural Sciences	3 - 4 credits	Natural Sciences	3 - 5 credits
Social & Behavioral Sciences	3 credits	Social & Behavioral Sciences	3 credits
Arts & Humanities	3 credits	Arts & Humanities from	3 credits
Critical Thinking	0 credits	Total	18 credits
Computer & Information Literacy	3 credits		
Total	21-24 credits		

Please review each General Education Area in the chart below, and record the needed changes in the chart and on the attached semester program layout.

REQUESTED CHANGES	
<b>General Education Area</b>	
<b>English Composition</b> – The requirement for one writing/English composition course remains the same. No changes will be made unless specifically requested below. (Use Writing Elective or ENG 111)	
Optional Change:	<b>No Change</b>
<b>2<sup>nd</sup> Course in English Composition or one course in Communication</b> WCC previously required both a second composition/writing course and a speech course. Your options are: <ol style="list-style-type: none"> <li>Allow students to select any course that meets composition/writing or speech (<i>recommended</i>).</li> <li>Require students to take a specific composition course (identify course below and on semester layout).</li> <li>Require students to take a specific communication course (identify course below and on semester layout).</li> </ol>	
Requested Change:	<b>#1</b>

✓	<b>Mathematics</b> – The requirement for one mathematics course remains the same. However, the courses that meet the MTA requirement have changed slightly.
	Optional Change:
✓	<b>Natural Sciences</b> - The requirement for one natural science course remains the same. No changes will be made unless specifically requested below.
	Optional Change:
✓	<b>Social &amp; Behavioral Sciences</b> – The requirement for one social and behavioral science course remains the same. No changes will be made unless specifically requested below.
	Optional Change:
✓	<b>Arts &amp; Humanities</b> – The requirement for one arts and humanities course remains the same. No changes will be made unless specifically requested below. (Note: A COM course can be specified here if speech is not required in the area above. It can only count in one area.)
	Optional Change:
	<b>Computer and Information Literacy</b> The requirement for computer and information literacy has been removed. Your options are: <ol style="list-style-type: none"> <li>1. Continue to require a specific computer course. If a specific course is required in your program, we will leave it there. If you previously used "Computer and Information Literacy Course," you will need to specify either a specific course or a list of courses from which to choose.</li> <li>2. Remove the computer and information literacy course if the program will still meet the minimum of 60 credit hours.</li> <li>3. Remove the computer and information literacy course and replace the course with elective or other credits as needed to meet the minimum of 60 credit hours.</li> </ol>
	Required Change: change to #2

Reviewer	Print Name	Signature	Date
Initiator	Brian Martindale	<i>Brian Martindale</i>	11-20-17
Department Chair	ROBERT CARTER	<i>Robert S. Carter</i>	11-20-17
Division Dean/ Administrator	Brandon Tucker	<i>[Signature]</i>	11/21/17
Vice President for Instruction	Kimberly Hudson	<i>[Signature]</i>	11/28/17

**Office use only**

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## Program Information Report

### Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR) Associate in Applied Science Degree

**Program Effective Term:** Fall 2016

**High Demand Occupation High Skill Occupation High Wage Occupation**

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**Articulation:**

Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: <http://www.wccnet.edu/curriculum/articulation/levelone/colleges>.

<b>First Semester</b>		<b>(15 credits)</b>
HVA 101	Heating, Ventilation and Air Conditioning I	4
HVA 102	HVAC Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
	Math Elective(s)	3-4
<b>Second Semester</b>		<b>(13 credits)</b>
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 202	Air System Layout and Design	3
WAF 104	Soldering and Brazing	2
<b>Third Semester</b>		<b>(9 credits)</b>
HVA 108	Residential HVAC Competency Exams and Codes	3
	Computer Lit. Elective(s)	3
	Arts/Human. Elective(s)	3
<b>Fourth Semester</b>		<b>(14 credits)</b>
HVA 201	Energy Audits	4
HVA 203	Refrigeration Systems	3
HVA 205	Hydronic Systems	4
	Nat. Sci. Elective(s)	3-4
<b>Fifth Semester</b>		<b>(12 credits)</b>
HVA 207	Commercial Industry Standards with Competency Exams	3
	Writing Elective(s)	3-4
	Soc. Sci. Elective(s)	3
	Speech Elective(s)	3
<b>Minimum Credits Required for the Program:</b>		<b>63</b>



PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: APHVCR Program Name: Heating, Ventilation, Air Conditioning and Refrigeration Effective Term: Fall '16

Division Code: HVAD Department: Heating, Ventilation and Air Conditioning

**Directions:**

1. Attach the current program listing from the WCC catalog or Web site 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 Master Syllabus form, but should be submitted at the same time as the program change form.

**Requested Changes:**

- |  |   |
|--|---|
| <input type="checkbox"/> Review                          | <input type="checkbox"/> Program admission requirements   |
| <input type="checkbox"/> Remove course(s): _____         | <input type="checkbox"/> Continuing eligibility requirements  |
| <input type="checkbox"/> Add course(s): _____            | <input type="checkbox"/> Program outcomes   |
| <input type="checkbox"/> Program title (title was _____) | <input type="checkbox"/> Accreditation information  |
| <input checked="" type="checkbox"/> Description          | <input type="checkbox"/> Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses) |
| <input type="checkbox"/> Type of award                   | <input type="checkbox"/> Other _____  |
| <input type="checkbox"/> Advisors                        |   |
| <input type="checkbox"/> Articulation information        |   |

Show all changes on the attached page from the catalog.

**Rationale for proposed changes or discontinuation:**

Discontinuation of CVHVIT Heating, Ventilation, AC and Refrigeration – Industrial Trade, necessitates a change to the description of APHVCR. See attached.

**Financial/staffing/equipment/space implications:**

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

**Signatures:**

Reviewer	Print Name	Signature	Date
Initiator	Robert Carter	<i>Robert E. Carter</i>	5-4-16
Department Chair	Robert Carter	<i>Robert E. Carter</i>	5-4-16
Division Dean/Administrator	Brandon Tucker	<i>[Signature]</i>	5-9-16
Vice President for Instruction	Michael Nealon	<i>[Signature]</i>	7/21/16

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Entered in: Banner 7/22/16 & A Database NA Log File 7/22/16 MD

Please submit completed form to the Office of Curriculum and Assessment.

*logged 5/13/16 sj*  
Office of Curriculum & Assessment  
*done 7/22/16 MD*

# ACADEMICS

## Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

Associate in Applied Science Degree

2014 - 2015 2015 - 2016 2016 - 2017

### Description

This program is a capstone to ~~both the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Trade and the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Trade Advanced Certificates~~. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

### Articulation

Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:

[www.wccnet.edu/curriculum/articulation/levelone/colleges](http://www.wccnet.edu/curriculum/articulation/levelone/colleges).

### Contact Information

Division: Adv Tech/Public Serv Careers

Department: Heating, Ventilation, A/C Dept

Advisors: [Bradley Hoth](#)  
[Robert Carter](#)

### Requirements

(Items marked in orange are available online.)

#### First Semester

Class	Title	Credits
<u>Elective(s)</u>	<u>Math</u>	3 - 4
<u>HVA 101</u>	Heating, Ventilation and Air Conditioning I	4
<u>HVA 102</u>	HVAC Sheet Metal Fabrication	4
<u>HVA 103</u>	Heating, Ventilation, and Air Conditioning II	4
<b>Total</b>		<b>15 - 16</b>

#### Second Semester

Class	Title	Credits
<u>HVA 105</u>	Residential and Light Commercial Heating Systems	4
<u>HVA 107</u>	Residential and Light Commercial Air Conditioning Systems	4
<u>HVA 202</u>	Air System Layout and Design	3
<u>WAF 104</u>	Soldering and Brazing	2
<b>Total</b>		<b>13</b>

#### Third Semester

Class	Title	Credits
<u>Elective(s)</u>	<u>Computer and Information Literacy</u>	3
<u>Elective(s)</u>	<u>Arts and Humanities</u>	3
<u>HVA 108</u>	Residential HVAC Competency Exams and Codes	3
<b>Total</b>		<b>9</b>

#### Fourth Semester

Class	Title	Credits
<u>Elective(s)</u>	<u>Natural Sciences</u>	3 - 4
<u>HVA 201</u>	Energy Audits	4
<u>HVA 203</u>	Refrigeration Systems	3

<u>HVA 205</u>	Hydronic Systems	4
<b>Total</b>		<b>14 - 15</b>

**Fifth Semester**

Class	Title	Credits
<u>Elective(s)</u>	<u>Writing</u>	3 - 4
<u>Elective(s)</u>	<u>Speech</u>	3
<u>Elective(s)</u>	<u>Social and Behavioral Science</u>	3
<u>HVA 207</u>	Commercial Industry Standards with Competency Exams	3
<b>Total</b>		<b>12 - 13</b>

**Total Credits Required: 63 - 66**

PROGRAM CHANGE FORM

Program Code: APHVCR

Program Name: Heating, Ventilation, Air Conditioning and Refrigeration Associate in Applied Science Degree (AAS)

Effective Term: Winter 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 MTH ~~162~~ and ~~162~~ <sup>157 152</sup> course(s)

Add \_\_\_\_\_ course(s)

Total credits: Current credits 67 After changes 60

Title (title was Associate in Science (AS))

Description

Advisors Les Pullins

Articulation information

Program admission requirements

Continuing eligibility requirements

Program outcomes

Other changing award type

Show all changes on the attached page from the catalog.

**Rationale for proposed changes:**

Improve student satisfaction, success, and completion rate.

**Financial/staffing/equipment/space implications:**

None

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

None

**Signatures:**

Reviewer	Print Name	Signature	Date
Program Change Initiator	Les Pullins	<i>Les Pullins</i>	2/3/04
Department Chair	William Figg	<i>Bill Figg</i>	2/3/04
Division Dean/Administrator	Granville Lee	<i>Granville Lee</i>	2/3/04
Vice President for Instruction	Roger Palay	<i>Roger M. Palay</i>	2/18/04

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 3/25

Log 3/25/04

Copied and Returned \_\_\_\_\_

# Heating, Ventilation, Air Conditioning and Refrigeration (ASHVAR)

**AAS** ✓

## Associate in Science Degree

### Requirements

(67 Credits)

1. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC). 25
2. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI), *OR* 15
- ~~3. Complete MTH 151 and MTH 152.~~
- \* → 3. Complete one Group I course from each of the six General Education Areas\* 18 - 21

Total Credits Required for the Program:

~~67 Credits~~

Commercial Advanced Certificate (CVHVAM) 60

### Heating, Ventilation, Air Conditioning and Refrigeration (ASHVAR)

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate. It provides a rigorous heating, ventilation, air conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

Students must demonstrate basic computer literacy skills by successfully passing the Computer and Information Literacy Test. The test can be taken at any point during the program, but must be completed before graduating.

APC 1-1

# Heating, Ventilation, Air Conditioning and Refrigeration - Residential (CTHVAC)

**Certificate**

### Required Courses

(25 Credits)

HVA 101	Heating, Ventilating, and Air Conditioning I	4
HVA 102	Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
HVA 105	Heating, Ventilation, and Air Conditioning III	4
HVA 107	Heating, Ventilation, and Air Conditioning IV	4
HVA 108	Residential HVAC Codes and Competency Exams	3
WAF 104	Soldering & Brazing	2

Total Credits Required for the Program:

25 Credits

### Heating, Ventilation, Air Conditioning and Refrigeration - Residential (CTHVAC)

This program prepares you for entry-level jobs in HVAC contracting companies, HVAC servicing companies, hospitals, schools and other public institutions, and apprenticeships in large manufacturing plants and supply houses. In these commercial, residential, or institutional settings you will combine your diagnostic and repair skills with customer relations skills to service heating, ventilation, and air conditioning equipment. This program also helps prepare you for the third class refrigeration licensure examination.

Program Information Report

**School of Construction Technology**

**HVAC**

**Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)**

**Associate in Applied Science Degree**

**Program Effective Term: Fall 2008**

This program is a capstone to both the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial and the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Advanced Certificates. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**General Education Requirements (18 credits)**

Writing	Elective(s)	3-4
Speech	Elective(s)	3
Math	Elective(s)	3-4
Nat. Sci.	Elective(s)	3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3

**Major/Area Requirements (42 credits)**

	Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (25 credits).	
HVA 101	Heating, Ventilating, and Air Conditioning I	4
HVA 102	Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
HVA 105	Residential and Light Commercial Heating Systems	4
HVA 107	Residential and Light Commercial Air Conditioning Systems	4
HVA 108	Residential HVAC Competency Exams and Codes	3
WAF 104	Soldering and Brazing	2
Elective	Complete the Heating, Ventilation, Air Conditioning and Refrigeration- Commercial Advanced Certificate (15 credits). HVA 201, HVA 202, HVA 203, HVA 205, HVA 207 or	
Elective	Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (15 Credits). HVA 201, HVA 202, HVA 204, HVA 206, HVA 208	15
Elective	HVA or WAF courses recommended*	2

**Minimum Credits Required for the Program: 60**

**Notes:**

\*Complete additional credits to bring the total to 60 credits. Students should meet with a program advisor to select an appropriate elective course.

Students must meet the Computer and Information Literacy Graduation Requirement. See General Education Graduation Requirements in the WCC Bulletin.

3/26/08

- reduced math + nat. sci. electives to minimum 3 cr. each
  - added 2 cr. elective for major/area requirements
  - allows students to take 3 cr. math + nat. sci. courses to meet Gen. Ed. requirement
- Joy G. ok change

# Construction and Building Trades

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## Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

'UNDER CONSTRUCTION'

### Associate in Applied Science Degree

Program Effective Term: Fall 2004

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This program is a capstone to both the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial and the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Advanced Certificates. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

<b>Requirements</b>	<b>(60 credits)</b>
1. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC).	25
2. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI) or the Commercial Advanced Certificate (CVHVAM).	15
3. Complete one Group I course from each of the six General Education Areas.	20-21

**Minimum Credits Required for the Program:** 60

PROGRAM CHANGE FORM

Program Code: Program Name:

Effective Term:

APHVCR

Heating Ventilation, Air Conditioning, and Refrigeration – AAS Degree

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>G. 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

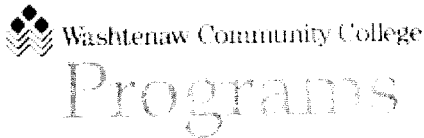
Program Change Form 8-2003

Access Program File \_\_\_\_\_

Log 9/13/04 *fn*

Copied and Returned \_\_\_\_\_





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

**Programs: Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)**  
 Associate in Applied Science Degree

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

**Description:** This program is a capstone to both the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial and the Heating, Ventilation, Air Conditioning and Refrigeration - Commercial Advanced Certificates. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**Division:** Health and Applied Technologies

**Department:** Welding and Fabrication

**Advisors:** Les Pullins

*Handwritten notes:* ISILL E166 and Les PULLINS

**General Education Requirements**

(20 - 21 Credits)

Writing	Elective(s)	3 - 4
Speech	Elective(s)	3
Math	Elective(s)	4
Nat. Sci.	Elective(s)	4
Soc. Sci.	Elective(s)	3
Arts/Hum.	Elective(s)	3

**Major/Area Requirements**

(40 Credits)

	Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (25 credits).	
HVA 101	Heating, Ventilating, and Air Conditioning I	4
HVA 102	Sheet Metal Fabrication	4
HVA 103	Heating, Ventilation, and Air Conditioning II	4
HVA 105	Heating, Ventilation, and Air Conditioning III	4
HVA 107	Heating, Ventilation, and Air Conditioning IV	4
HVA 108	Residential HVAC Codes and Competency Exams	3
WAF 104	Soldering & Brazing	2
	Complete the Heating, Ventilation, Air Conditioning and Refrigeration- Commercial Advanced Certificate (15 credits). HVA 201, HVA 202, HVA 203, HVA 205, HVA 207	
	or	
	Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (15 credits). HVA 201, HVA 202, HVA 204, HVA 206, HVA 208	15

**Heating, Ventilation, Air Conditioning, and Refrigeration  
(ASHVAR)**

'PHASED OUT'

**Associate in Science Degree**

**Program Effective Term: Fall 2004**

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This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**Continuing Eligibility Requirements:**

Students must demonstrate basic computer literacy skills by successfully passing the Computer and Information Literacy Test. The test may be taken at any point during the program, but must be completed before graduating.

<b>Requirements</b>	<b>(67 credits)</b>
1. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC).	25
2. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI).	15
3. Complete MTH 151 and MTH 152.	8
4. Complete one Group I course from each of the six General Education Areas	19-21

**Minimum Credits Required for the Program:**

**67**



PROGRAM CHANGE FORM

Program Code: Program Name:

RAC (1998-1999) A.A.S. Degree in Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR-Technology)

Effective Term:

Fall 2003

Directions: 1.) Attach the current program listing from the WCC catalog and indicate any changes that you would like to make. 2.) Draw lines through anything that should be deleted and write in additions. Extensive narrative changes may be included on a separate sheet. 3.) Check the boxes below for each type of change being proposed. If you are making changes to courses or proposing new courses as part of this proposal, they must be approved separately using a Course-Syllabus Approval Form (CSAF). Courses that are being discontinued also should be submitted on CSAF forms.

1. Requested Changes:

- Remove All Course(s)
Add See Attached Course(s)
Total Credits: Current Credits 67-70 After Changes 65
Change Course Semester Sequencing
Change Title (title was Refrigeration and Air Conditioning)
Description
Advisors
Articulation Information
Program Admission Requirements
Continuing Eligibility Requirements
Footnotes
Other Re-Activate

Show all changes on the attached program sheet.

Description: This program is a capstone to the HVACR-Advanced Certificate. It provides a rigorous HVACR background with solid preparation for entry level management positions or transfer to four-year programs offering Bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications recognized throughout the heating, ventilation, and air-conditioning industry.

2. Rationale for Proposed Changes:

Program reactivated and revised to provide students with a rigorous HVACR program offering preparation for advanced technical certifications and/or transfer to four-year programs.

3. Financial/Staffing/Equipment/Space Implications:

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.)

4. Has the department consulted with all departments that may be impacted? Yes [checked] No [ ] NA [ ]

Comments: None

\*\*REMINDER: Please include the current program sheet with all changes listed.

Signatures:

Table with 4 columns: Reviewer, Print Name, Signature, Date. Rows include Program Change Initiator (Thomas Achatz), Department Chair (William Figg), Division Dean/Administrator (Granville Lee), and Executive Vice President, Instruction (Roger Palay).

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

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**Heating, Ventilation, Air Conditioning and Refrigeration  
(ASHVAC)**

'UNDER CONSTRUCTION'

**Associate in Science Degree**

**Program Effective Term: Fall 2003**

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This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate. It provides a rigorous heating, ventilation, air-conditioning and refrigeration (HVACR) background with solid preparation for entry-level management positions or transfer to four-year programs offering bachelor degrees in HVACR, technology management, and other technically oriented fields. This program also provides opportunities to obtain advanced certifications which are recognized throughout the heating, ventilation and air-conditioning industry.

**Health and Applied Technologies Division  
Technical Education Department**

**Advisor:** Thomas Achatz

**Continuing Eligibility Requirements:**

Students must demonstrate basic computer literacy skills by successfully passing the Computer and Information Literacy Test. The test may be taken at any point during the program, but must be completed before graduating.

<b>Requirements</b>	<b>(67 credits)</b>
1. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC).	25
2. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI).	15
3. Complete MTH 151 and MTH 152.	8
4. Complete one Group I course from each of the six General Education Areas.	19-21

**Minimum Credits Required for the Program:** 67

*1998-1999 bulletin*

*Heating, Ventilation, Air Conditioning and Refrigeration (HVAC)*  
**Refrigeration and Air Conditioning**  
*Applied Science Technology*

Associate in Technical Studies Degree Program: Code RAC  
 Advisor: Les Pierce Tom Achatz

This is primarily a trade-related instruction program. Its purpose is to upgrade persons currently employed in this industry; however, students who are not currently employed in the industry are welcome. Courses are offered in the evening only. All training materials are provided by the Refrigeration Service Engineer's Society (RSES). Students should expect to pay approximately \$125 per term in addition to tuition. RSES is a non-profit international educational organization whose sole purpose is the education and training of its members, assisting them in keeping their skills up to date, thereby offering better service to the public. The program is guided by an Advisory Committee consisting of journeypersons and contractors and is offered in cooperation with the local chapter of the Refrigeration Service Engineers Society. Consent of the program advisor is required for registration.

*See Attached*

**Program Admission Requirements**  
 Consent of RAC program advisor

Course Number	Course Title	Credit Hours
CIS 100	Intro to Computers	3
ENG	Restricted ENG Elective (100 or 111)	4
HTG 111	Heating Fundamentals	3
HTG 122	Heating Systems	3
HTG 213	Heating Controls	3
MTH <sup>1</sup>	Restricted Math Elective	3-4
PLS 112	Introduction to American Government	3
RAC 111	Refrigeration I	5
RAC 122	Refrigeration II	5
RAC 123	Systems Lab I	5
RAC 124	Basic Controls	5
RAC 212	Systems Lab II	3
RAC 213	Air Conditioning	5
RAC 214	Control Systems	5
RAC 215	Troubleshooting Controls	3
RAC 216	Systems Lab III	5
SCI 100	Intro to Natural Sciences	1
WAF 104	Soldering and Brazing	2
HUM*	Restricted Humanities Elective	1-3

**Total credit hours for program: 67-70**  
 \* Choose from list of Humanities courses that meet elements 13 and 14 on page 60.

**<sup>1</sup>Restricted Math Electives**

MTH 151	Technical Algebra	4
MTH 160	Statistics	4
MTH 163	Business Math	3
MTH 169	Intermediate Algebra	4

**<sup>1</sup>Restricted Humanities Electives**

ANT 201	Introduction to Cultural Anthropology	3
ART 130	Art Appreciation	3
ART 143	Art and Culture of Afro-America	3
DAN 110	Afro-American Dance	1
ENG 140, 160, 170, 181, 200, 211, 212, 213	(see course descriptions for titles)	3
FRN 111	First Year French I	4
GRM 111	First Year German I	4
HUM 101, 102, 150	(see course descriptions for titles)	3
MUS 180, 183	(see course descriptions for titles)	3
PHO 103	History of Photography	3
RUS 111	First Year Russian I	4
SPN 111	First Year Spanish I	4

**<sup>2</sup>Restricted Science Electives**

AST 111	General Astronomy	3
BIO 101	Concepts of Biology	4
BIO 102	Human Biology	4
BIO 111	Anatomy/Physiology	5
BIO 227	Zoology	4
BIO 228	Botany	4
GEO 100	Geography and the Environment	3
GLG 100	Intro to Earth Science	4
PHY 105	Conceptual Physics	4

**Journeyperson Industrial**

Associate in Technical Studies Degree Program: Code JPI

This Associate Degree can be awarded to skilled tradespersons upon earning 60 hours or more including the courses listed below. All credits earned in Trade Related Instruction that are part of a bona fide apprenticeship program registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training may be applied to the Journeyperson Industrial Degree. Credit coursework completed at other institutions offering trade related instruction is evaluated and may be applicable.

**Program Admission Requirements**

- Passing score on apprenticeship entrance exam
- Sponsorship of qualified firm

Course Number	Course Title	Credit Hours
CIS 100	Intro to Computers	3
ENG 111	Composition I	4
MTH	Restricted Math Elective (MTH 151, 160, 169 or 178)	4
PLS 112	Introduction to American Government	3
SCI 100	Intro to Natural Sciences	1
HUM*	Restricted Humanities Elective	1-3
TRI**	Restricted Trade Related Instruction Electives	44

**Total credit hours for program: 60-62**

\* Choose from list of Humanities courses that meet elements 13 and 14 on page 60.  
 \*\* See Program advisor before choosing.

*From:*  
 1998-1999 College Bulletin

# 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)

## HVAC-R: Commercial Advanced Certificate (XXXXX):

- 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**

## Degree Options

Transfer to 4-year program (EMJ, other)

## 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**

**NEW**

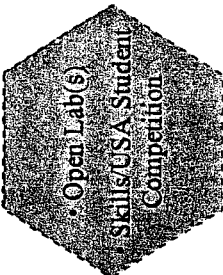
## HVAC-R: Industrial Advanced Certificate (YYYY):

- 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**

## 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**

**Reactivated/Revised**



Thomas Achatz, PE, Program Advisor

3/27/2003 6:39:18 PM