### PROGRAM CHANGE FORM

Program Code: APHVCR	Program Name: Heating, Ventila Associate in Applied Science De	etion, Air Conditioning and Refrigeration	Effective Term: Winter 2004		
Directions:					
1. Attach the current prog	ram listing from the WCC catalog and	indicate any changes to be made			
2. Draw lines through any a separate sheet.	text that should be deleted and write in	additions. Extensive narrative	changes can be included on		
new courses as part of the should be submitted at the	for each type of change being propose he proposed program change, must be the same time as the program change for	approved separately using a Cou			
Requested Changes:	,,*¬				
Add course(s)  Total credits: Current c	Other <u>Changing award typo</u>				
Rationale for proposed of Improve student satisfac	tion, success, and completion rate.				
Financial/staffing/equij	pment/space implications:				
List departments that ha	ive been consulted regarding the use	e of this program.			
Signatures:					
Reviewer	Print Name	Signature	Date		
Program Change Initiator	Les Pullins	Nes tellen.	2/3/04		
Department Chair	William Figg	Billo	2/2/04		
Division Dean/Administrat	or Granville Lee	de lega	2/3/04		
Vice President for Instruction	on Roger Palay	Races M. Pol	lon 2/18/04		
Please submit completed	I form to the Office of Curriculum a	nd Articulation Services.			
Office of Curriculum & Articulation Services  Program Change Form 8-2003					
Access Program File 3/2	S Log 3/25/04	Copied and Returned			

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

### **Associate in Science Degree**

Requirements

1. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC).

2. Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI).

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

Cectificate (CVHVAM)

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

This program is a capstone to the Heating, Ventilation, Air Conditioning and Refrigeration. Industrial exposed 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 technology management, and other technology 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 successfull passing the Computer and Information Literacy Test. The test can be taken at any point during the program, but must be completed before graduating

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

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

Total Credits Required for the Program:

25 Credits

Heating Ventilation, Air Conditioning and Berggeration Residential

This program prepares you for entry-level jobs in HVAC contracting companies, HVAC servicing companies, hospitally solcols 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 economers. This program also helps prepare you for the third class refrigeration lightsure 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 Educ Writing Speech Math Nat. Sci.	ation Requirements  Elective(s)  Elective(s)  Elective(s)  Elective(s)  Elective(s)	redits) 3-4 3 3-4 3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3
Major/Area R	equirements (42.c	redits)
	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	15
	Advanced Certificate (15 Credits).	
	HVA 201, HVA 202, HVA 204, HVA 206, HVA 208	
Elective	HVA or WAF courses recommended*	2
Minimum Cre	dits Required for the Program:	60
	•	

### Notes:

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 neet Sen. Ed. requirement

Joy G ok change

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

### Construction and Building Trades

Heating, Ventilation, Air Conditioning and Refrigeration (APHVCR)

Associate in Applied Science Degree

Program Effective Term: Fall 2004

7

'UNDER CONSTRUCTION'

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.

### Requirements

(60 credits)

Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Residential Certificate (CTHVAC).
 Complete the Heating, Ventilation, Air Conditioning and Refrigeration - Industrial Advanced Certificate (CVHVAI) or the Commercial Advanced Certificate (CVHVAM).
 Complete one Group I course from each of the six General Education Areas.

Minimum Credits Required for the Program:

60

### PROGRAM CHANGE FORM

Program Code:	Program Name:			Effective Term:
<u>APHVCR</u>	Heating Ventila	ation, Air Conditioning, 2	<u>and Refrigeration – ΛAS Degre</u>	<u>Fall 2004</u>
<ul><li>2. Draw lines thro a separate sheet</li><li>3. Check the boxe new courses as</li></ul>	ugh any text that si t. es below for each ty part of the propose	hould be deleted and write in	indicate any changes to be made.  n additions. Extensive narrative chan  d. Changes to courses, discontinuin approved separately using a Course orm.	g a course, or adding
Requested Char	ges: course(s)		Williar ⊠Advisors <del>Ralph Har</del>	grave and Les Pullins
Add Total credits: 0 Title (title was Description	course(s) Current credits	After changes	Articulation information information r	equirements requirements
8	. •			
Reflect change is	oposed changes:  n faculty reponsibil	pace implications:		
None				
List departmen N/A	ts that have been	consulted regarding the u	se of this program.	
Signatures:	viewer	Print Name	Signature	Date
Program Change	Initiator	Les Pullins	Jos Pulli	9/9/04
Department Chai		Bill Figg	William H-Co	ox 9-9-04
Division Dean/A		Granville Lee	If W. pur	9/9/04
Vice President fo		Roger Palay	More M. Palse	y 9/13/04
			and Articulation Services.	
	& Articulation Service.			n Change Form 8-2003
Access Program File_		Log_9/13/00	Copied and Returned	

## W€C Programs: Heating, Ventilation, Air Conditioning and Refrigeration Associate in ... Page 1 of



# **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

Departme	nt: Welding and Fabrication	15/6b/	PULLINS
Advisors:	es Pullins	and hes	10001112
General Edu	cation 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	a 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

### 'PHASED OUT'

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

### Associate in Science Degree

Program Effective Term: Fall 2004

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 airconditioning 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.

Requirem	ents (6	37 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).	15
3.	Complete MTH 151 and MTH 152.	8
4.	Complete one Group I course from each of the six	19-21

Minimum Credits Required for the Program:

67

### PROGRAM CHANGE FORM

RAC (1998-1999)	(HVACR-Technolo				Effective Term: Fall 2003
Directions: 1.)	Attach the current to make.	program listing from the W	CC catalo	g and indicate any change	es that you would like
2.)	Draw lines throug	n anything that should be d n a separate sheet.			
	proposing new courses	elow for each type of chan as part of this proposal, they mu are being discontinued also shou	st be approve	ed separately using a Course-S	changes to courses or yllabus Approval Form
1. Requested Ch	anges:				
☐ Total Credits: ☐ Change Cours	ched Course(s) Current Credits 6 e Semester Sequen	7-70 After Changes <u>65</u> acing ation and Air Conditioning	)		Requirements
Show all changes	on the attached prog	am sheet.			
solid preparation f	or entry level manag	ne to the HVACR-Advanced ement positions or transfer to hnically oriented fields. This e heating, ventilation, and air	program al	rograms offering Bachelor so provides opportunities to	degrees in 11 viters,
Program reactiva	Proposed Chang ted and revised to pr /or transfer to four-y	ovide students with a rigorous	s HVACR p	rogram offering preparation	n for advanced technical
Comment staffing (	no full time faculty)	Space Implications: /Equipment (Hampden Traine are adequate. WAF 104: Sold	ers, etc )	Space (OE 101classroom, 1 zing uses the current welding	108 computer lab, 109 ng lab (OE 141.)
4. Has the depa Comments: N		with all departments tha	t may be i	mpacted? Yes 🛚	No NA NA
**REMINDI	ER: Please inc	lude the current prog	ram shee	et with all changes l	isted.
	iewer	Print Name		Signature	Date
Program Change	Initiator:	Thomas Achatz	J	hours ahit	2/27/0
Department Chair	r:	William Figg	W	MANHY	) 03-03-03
Division Dean/Ac	dministrator:	Granville Lee		foll gu	3/3/03
Executive Vice P	resident, Instruction	Roger Palay	1/100	ger M. Pala	y 3/28/0
*Please submit comp	leted form to the Office	of Curriculum and Articulation Se	/ /		
Access Pro	ogram File	forms\Program Change Form v2.3.do	c 6/18/02 <b>/</b> Cop	ed and Returned	
Conies: In	itiator, Department Chair, ng to: Counseling; Admis	Dean, Curriculum Files		File Name: ProgramChangeFo	rmv2002-HVACR-Reactivate

### 'UNDER CONSTRUCTION'

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

### Associate in Science Degree

Program Effective Term: Fall 2003

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 airconditioning industry.

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

Thomas Achatz Advisor:

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.

Requireme	ents (6	7 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).	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

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4.	1Ddatidated Um	Manițies Electives	
	Mestrueu Dai	Introduction to Cultural Anthropology	3
	ANT 201	Art Appreciation	3
		Art and Culture of Afre America	/ 3
	ART 138	Ar and Cultura of Aire-Aire to a	1
	DAN 118	Afro American Dance	/ 3
	ENG 140, 160,	170 181 260, 211, 212, 213	
		(see course descriptions for titles)	
	FRN 111 /	First Year French?	//4
	GRM 111	First Year German I	.f
	HUM 1,91, 102,	158 (see course descriptions for titles)	3
	MUS 180, 183	(see course descriptions for titles)	
	PHO 103	History of Photography	3
	/RUS 111/	First Year Russian I	4
/	SPN 111	First Year Spanish	<i>f</i>
/	<i>""</i> "//		
_	2Doctoretad Sc	ience Electives	
	AST 111	General Astronomy	3
	,	Concepts of Biology	/24
	BIO 101/	Human Biology	4
	BIO 102	Anatomy/Physiology	5
	BIO 11(1		14
	BIO 227	Zoology	4
	BIO 228	Botany the Environment	3
	GEO 100	Geography and the Environment	4
	GLG 100/		4
	PHY 105	Conceptual Physics	••••••
	Agurneyo.	erson Industrial	
	// <i>//</i> — —		
	Associate in ]	Cechnical Studies Degree Pyngyam: Code JP	<b>'</b>
	11/11/1	/	<b>'</b>
	This Associate	Degree can be awarded to signified tradesperson	s ypon
//	samink 60 hou	are of more infalleding the courses/listed below.	n creaus
	comed in Trac	le Related Instruction that are part of a bolland	ue appren-
	tionship progra	m registered with the U.S. Department of Lab	or, Bureau
	of Annountings	han and Training that be applied to the Journe	yper <b>s</b> on
	V. J. K. 1/10/		ntuxions
	offering troofs	related instruction is evaluated and party be ap	plicable.
	ynering race		7
	Ducamam Adi	mission Requirements	
	Program Adi	ore on apprenticeship intrance skam	1
			//
	Sponsorsm	p of qualified firm	
			Credit Hours
	Course Number	Course Tible	<del>J.C.J.C.J.C.G.</del>
	CIS 100	Intro to Copputers	3
	ENG 111	Okmonsition I	ffg.4
	MTH	Restricted Math Elective (MTH 151, 160, 169	6p/17884
	PLS 112	Introduction to American Government	
	SCI 100	Intro to Natural Sciences	<u></u>
		Restricted Humanities Elective	1-3
	HUM*	Restricted Trade Belated Instruction Elective	s44
	TRI**	The state of the s	
	Total supplie	bours for program: 60-62	
	inizi credit i	imulacioi programi. Vo Va ///	
	* Chanca from	ist of Humanities courses that meet elements 13 and 14 o	n page 60.
	* Choose from	ist of Humanities courses that meet elements 13 and 14 o	n page 60. «-
	* Choose from	ist of Humanities courses that meet elements 13 and 14 of activisor legore choosing.	n page 60.

Hes Degree Program: Code RAC Advisor: Les Pierse Tom

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.

### **Program Admission Requirements**

Consent of RAC program advisor

Course Number	Course Title	Credit Hours
CNS 100	Intro to Computers	
ENG.	Deathirted ENC Election (100 or 111)	4
HTG 11		
HTG 122	Hasting Proterno	/
HTG 213		
MTH1	D. 1.2(A. J. B. Backle, Electrica)	3-4
PLS 112		
	Refrigeration I	5
RAC 111	Petrigeration II	5
RAC 122	Chatama lab l	G
RAC 123	m-N- Comtrolo	5
RAC 124	Cuatama Lab II	3
RAC 212	Air Conditioning	5
RAC 213	Control Systems	5
RAC 214	Control Systems	وع
RAC 215	Troubleshooting Controls	
RAC 216	Systems Lab III	
SCI 100	Intro to Natural Sciences	
WAF 104		
HUM*	Restricted Humanities Elective	1-3

\* Choose from jet of Humanities courses that meet elements 13 and 14 on page 60. <sup>1</sup>Restricted Math Electives Technical Algebra..... MTH 151 Statistics..... MTH 1/60 Business Math. MTH/163 Intermediate Algebra. MTH 169

Leon Bulletin

Total credit hours for program: 67-70

# Heating, Ventilation, Air Conditioning-Refrigeration (HVAC-R) Program(s) (New) HVA 108: HVAC V: C/IS with EPA 608, Residential ICE, and HVAC Excellence (3/60) (Changed/TRI 103) HVA 102: Sheet Metal Fabrication (4/60) • HVAC Circuit sand Thermodynamics, Heat Transfer, and Psychrometrics HVAC-Residential Certificate (CTHVAC): WAF 104: Soldering & Brazing (2/60) Heating Systems and Cooling Systems HVAC Loads and HVAC Controls HVA 107: HVAC IV (4/90) HVA 103: HVAC II (4/90) HVA 105: HVAC III (4/90) HVA 101: HVACI (4/90) Introduction to HVAC REVISED Certificate



Contact Hours = 540

Total Credit Hours = 25

HVA 201: Energy Audits (3/60)

HVA 202: Air System Layout/Design (3/60)

Advanced

Certificate(s)

Complete Advanced Certificate Core Classes (31/660)

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

Fotal Credit Hours = 40 Contact Hours = 840

Degree Options

# AAS Occupational Studies - HVAC-R (APOST):

Complete (CTVAC) Certificate ...... Complete Gen Ed....

Minimum Credits AAS Occ Studies: HVAC-R .. 60 Complete an additional OccEd credits . . . . . 14-17











3. Math 151/152 Tech Algebra/Geometry & Trig. . . .

4. Complete Gen Ed Transfer Courses . .

2. Complete HVAC-R Advanced Certificate

1. Complete (CTVAC) Certificate.

AS HVAC-R Technology (RAC)

Total Credit Hours = 40 Contact Hours = 840

HVA 208: C/IS with Industrial ICE (3/60)

HVA 204: Central Heating Plants (3/60) HVA 206: Central Cooling Plants (3/60)