

Air Conditioning, Heating, and Refrigeration Technology (A35100)

The Air Conditioning, Heating, and Refrigeration Technology curriculum provides the basic knowledge to develop skills necessary to work with residential and light commercial systems.

Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety. The diploma program covers air conditioning, furnaces, heat pumps, tools and instruments. In addition, the A.A.S. degree covers residential building codes, residential system sizing, and advanced comfort systems.

Diploma graduates should be able to assist in the start-up, preventive maintenance, service, repair, and/or installation of residential and light commercial systems. A.A.S. degree graduates should be able to demonstrate an understanding of system selection and balance and advanced systems.

COURSE REQUIREMENTS

Richmond Community College provides day and evening course sequences for selected programs to enable students to better plan what courses to take to reach their educational goals. However, given the continued increase in the use of technology in instruction and increasing student demand for distance learning courses, the College may offer hybrid, online, web-based and information highway courses in place of traditional courses in any course sequence that is listed. Therefore, students should be aware of this possibility and prepare themselves to successfully function in a hybrid, online, web-based, or information highway course.

				Class	Lab	Work/ Clinical	Credit
A. General Education Courses							
1. Required Courses							
COM	231	Public Speaking		3	0	0	3
ENG	111	Writing and Inquiry		3	0	0	3
MAT	143	Quantitative Literacy		2	2	0	3
		Humanities/Fine Arts Elective*		3	0	0	3
		Social/Behavioral Sciences Elective*		3	0	0	3
B. Major Courses							
1. Core Courses							
<i>To receive a degree, diploma or certificate from RCC, a student must have a grade of "C" or better in all core courses for the program of study.</i>							
AHR	110	Intro to Refrigeration		2	6	0	5
AHR	111	HVACR Electricity		2	2	0	3
AHR	112	Heating Technology		2	4	0	4
AHR	113	Comfort Cooling		2	4	0	4
AHR	114	Heat Pump Technology		2	4	0	4
AHR	130	HVAC Controls		2	2	0	3
AHR	211	Residential Systems Design		2	2	0	3
AHR	212	Advanced Comfort Systems		2	6	0	4
AHR	213	HVACR Building Code		1	2	0	2
2. Other Major Courses							
AHR	115	Refrigeration Systems		1	3	0	2

AHR	120	HVACR Maintenance	1	3	0	2
AHR	151	HVAC Duct Systems I	1	3	0	2
AHR	160	Refrigerant Certification	1	0	0	1
AHR	180	HVACR Customer Relations	1	0	0	1
AHR	235	Refrigeration Design	2	2	0	3
BUS	110	Introduction to Business	3	0	0	3
	or					
BUS	230	Small Business Management	3	0	0	3
CIS	110	Introduction to Computers	2	2	0	3
C. Other Required Courses						
ACA	122	College Transfer Success	0	2	0	1

Total Credit Hours**65**

*Approved Electives are listed on the page before the Course Descriptions.

SEMESTER SCHEDULE						
AIR CONDITIONING, HEATING, AND REFRIGERATION TECHNOLOGY						
			Class	Lab	Work/ Clinical	Credit
First Year – Fall Semester						
ACA	122	College Transfer Success	0	2	0	1
AHR	110	Intro to Refrigeration	2	6	0	5
AHR	111	HVACR Electricity	2	2	0	3
AHR	113	Comfort Cooling	2	4	0	4
AHR	180	HVACR Customer Relations	1	0	0	1
CIS	110	Introduction to Computers	2	2	0	3
			9	16	0	17
First Year – Spring Semester						
AHR	112	Heating Technology	2	4	0	4
AHR	114	Heat Pump Technology	2	4	0	4
AHR	151	HVAC Duct Systems I	1	3	0	2
AHR	160	Refrigerant Certification	1	0	0	1
BUS	110	Introduction to Business	3	0	0	3
	or					
BUS	230	Small Business Management	3	0	0	3
ENG	111	Writing and Inquiry	3	0	0	3
			12	11	0	17
Second Year – Fall Semester						
AHR	115	Refrigeration Systems	1	3	0	2
AHR	211	Residential System Design	2	2	0	3
AHR	213	HVACR Building Code	1	2	0	2
COM	231	Public Speaking	3	0	0	3

MAT	143	Quantitative Literacy	2	2	0	3
		Humanities Fine Arts Elective*	3	0	0	3
			—	—	—	—
			12	9	0	16
Second Year – Spring Semester						
AHR	120	HVACR Maintenance	1	3	0	2
AHR	130	HVAC Controls	2	2	0	3
AHR	212	Advanced Comfort Systems	2	6	0	4
AHR	235	Refrigeration Design	2	2	0	3
		Social /Behavioral Sciences Elective*	3	0	0	3
			—	—	—	—
			10	13	0	15

Total Credit Hours**65**

*Approved Electives are listed on the page before the Course Descriptions.

**SEMESTER SCHEDULE
AIR CONDITIONING, HEATING, AND REFRIGERATION TECHNOLOGY
(DIPLOMA) (D35100)**

			Class	Lab	Work/ Clinical	Credit
First Year – Fall Semester						
ACA	122	College Transfer Success	0	2	0	1
AHR	110	Intro to Refrigeration	2	6	0	5
AHR	111	HVACR Electricity	2	2	0	3
AHR	113	Comfort Cooling	2	4	0	4
AHR	180	HVACR Customer Relations	1	0	0	1
CIS	110	Introduction to Computers	2	2	0	3
			—	—	—	—
			9	16	0	17
First Year – Spring Semester						
AHR	112	Heating Technology	2	4	0	4
AHR	114	Heat Pump Technology	2	4	0	4
AHR	151	HVAC Duct Systems I	1	3	0	2
AHR	160	Refrigerant Certification	1	0	0	1
BUS	110	Introduction to Business	3	0	0	3
		or				
BUS	230	Small Business Management	3	0	0	3
ENG	111	Writing and Inquiry	3	0	0	3
MAT	143	Quantitative Literacy	2	2	0	3
			—	—	—	—
			14	13	0	20
Total Credit Hours						37

**AHRT: AIR CONDITIONING (CERTIFICATE) (C35100C)
COURSE REQUIREMENTS**

			Class	Lab	Work/ Clinical	Credit	
AHR	110	Intro to Refrigeration	2	6	0	5	
AHR	111	HVACR Electricity	2	2	0	3	
AHR	113	Comfort Cooling	2	4	0	4	
AHR	160	Refrigerant Certification	1	0	0	1	
Total Credit Hours						13	

**AHRT: HEATING (CERTIFICATE) (C35100H)
COURSE REQUIREMENTS**

			Class	Lab	Work/ Clinical	Credit	
AHR	110	Intro to Refrigeration	2	6	0	5	
AHR	111	HVACR Electricity	2	2	0	3	
AHR	112	Heating Technology	2	4	0	4	
AHR	114	Heat Pump Technology	2	4	0	4	
AHR	160	Refrigerant Certification	1	0	0	1	
Total Credit Hours						17	

Program Completion Guide
ASSOCIATE IN APPLIED SCIENCE
AIR CONDITIONING, HEATING, AND REFRIGERATION TECHNOLOGY (A35100)

Student Name: _____ ID#: _____ Date of Enrollment: _____

Section I: Developmental Courses (if needed)

Courses	Scores	Cr.	Prerequisites/ Corequisites	Grade	Notes/Semester
DMA 010 Operations with Integers	<7 on DAP	1	Pre: None		
DMA 020 Fractions and Decimals	<7 on DAP	1	Pre: DMA 010		
DMA 030 Propor/Ratio/Rate/Percent	<7 on DAP	1	Pre: DMA 010-020		
DMA 040 Express/Lin Equat/Inequal	<7 on DAP	1	Pre: DMA 010-030 or MAT 060		
DMA 050 Graphs/Equations of Lines	<7 on DAP	1	Pre: DMA 010-040 or DMA 040 and MAT 060		
DRE 096 Integrated Reading and Writing	104-116	3	Pre: None		
DRE 097 Integrated Reading Writing II	117-135	3	Pre: DRE 096		
DRE 098 Integrated Reading Writing III	136-150	3	Pre: DRE 097		

Section II:

A. Air Conditioning Certificate (C35100C) Course Requirements 13 credit hours: Complete Section I (as required) and Section II, A.

Courses	Cr.	Recommended Semester	Prerequisites/ Corequisites	Semester Registered/ Planned	Semester Completed/ Grade
AHR 110 Intro to Refrigeration*	5	1 st year – fall	None		
AHR 111 HVACR Electricity*	3	1 st year – fall	None		
AHR 113 Comfort Cooling* (not required for heating certificate)	4	1 st year – fall	None		
AHR 160 Refrigerant Certification	1	1 st year – spring	None		

B. Heating Certificate (C35100H) Course Requirements 17 credit hours: Complete Section I (as required) Section II, A and B.

Courses	Cr.	Recommended Semester	Prerequisites/ Corequisites	Semester Registered/ Planned	Semester Completed/ Grade
AHR 112 Heating Technology*	4	1 st year – spring	None		
AHR 114 Heat Pump Technology*	4	1 st year – spring	Pre: AHR 110 or AHR 113		

C. Air Conditioning, Heating, and Refrigeration Technology (D35100) Course Requirements 36 credit hours: Complete Section I (as required) and Section II, A, B, and C.

Courses	Cr.	Recommended Semester	Prerequisites/ Corequisites	Semester Registered/ Planned	Semester Completed/ Grade
ACA 122 College Transfer Success	1	1 st year – fall	None		
AHR 180 HVACR Customer Relations	1	1 st year – fall	None		
CIS 110 Introduction to Computers	3	1 st year – fall	Pre: DRE 097 Co: DRE 098		
AHR 151 HVAC Duct Systems I	2	1 st year – spring	None		
BUS 110 Introduction to Business or BUS 230 Small Business Management	3	1 st year – spring	Pre: DRE 097 Co: DRE 098 Pre: DRE 098 or RED 090		
ENG 111 Writing and Inquiry	3	1 st year – spring	Pre: DRE 098 or ENG 090 and RED 090 Co: ACA 122		
MAT 143 Quantitative Literacy	3	2 nd year – fall	Pre: DMA 010-050, DRE 098 Co: ACA 122		

D. Air Conditioning, Heating, and Refrigeration Technology Associate in Applied Science Degree (A35100) Course Requirements 65 credit hours: Complete Sections I (as required) and Section II, A, B, C, and D.

Courses	Cr.	Recommended Semester	Prerequisites/ Corequisites	Semester Registered/ Planned	Semester Completed/ Grade
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				Planned	Grade
AHR 115 Refrigeration Systems	2	2 nd year – fall	Pre: AHR 110		
AHR 211 Residential Systems Design*	3	2 nd year – fall	None		
AHR 213 HVACR Building Code*	2	2 nd year – fall	None		
COM 231 Public Speaking	3	2 nd year – fall	Pre: DRE 098 or ENG 090 and RED 090		
AHR 130 HVAC Controls*	3	2 nd year - spring	Pre: AHR 111 or ELC 111		
AHR 120 HVACR Maintenance	2	2 nd year – spring	None		
AHR 212 Advanced Comfort Systems*	4	2 nd year - spring	Pre: AHR 114		
AHR 235 Refrigeration Design	3	2 nd year - spring	Pre: AHR 110		

Electives: (All degree seeking students must take one Humanities/Fine Arts and one Social/Behavioral Sciences elective from lists below unless a specific course is required above.)

Humanities/Fine Arts Electives (3 credits)** Courses with the following prefixes will satisfy this requirement: ART, DRA, ENG (literature courses only), HUM, MUS, PHI, REL, and SPA (Intermediate Spanish I only).			
Courses offered at RCC: ART 111, DRA 111, ENG 131, ENG 231, ENG 232, MUS 110, PHI 240, REL 211, REL 212, SPA 211			
Course	Recommended Semester	Semester Registered/Planned	Semester Completed/Grade
	2 nd year – fall		

Social/Behavioral Sciences Electives (3 credits)** (Courses with the following prefixes will satisfy this requirement: ANT, ECO+, GEO, HIS, POL, PSY, and SOC) +Some business and accounting curricula require economics and do not accept ECO courses as fulfillment of this elective requirement.)			
Courses offered at RCC: ANT 220, HIS 111, HIS 112, HIS 131, HIS 132, PSY 150, PSY 241, SOC 210, SOC 213			
Course	Recommended Semester	Semester Registered/Planned	Semester Completed/Grade
	2 nd year - spring		

NOTES: *All courses must be completed with a grade of "C" or better.

**See course catalog for prerequisite and/or corequisite requirements.

Students please read the following and sign below.

I understand that as an RCC student, I am ultimately responsible for my schedule. I understand that I must complete each course with a grade of "C" or better and follow the established course sequence or my ability to graduate on time may be affected.

My advisor has information regarding other colleges and transfer opportunities that I can investigate after completing my degree/diploma/certificate, and I understand that if I would like more information I can schedule an appointment with him/her.

Student Name: _____ Student Signature: _____ Date: _____

Advisor Name: _____ Advisor Signature: _____ Date: _____

Student Name: _____ Student Signature: _____ Date: _____

Advisor Name: _____ Advisor Signature: _____ Date: _____

Student Name: _____ Student Signature: _____ Date: _____

Advisor Name: _____ Advisor Signature: _____ Date: _____

Student Name: _____ Student Signature: _____ Date: _____

Advisor Name: _____ Advisor Signature: _____ Date: _____