## AIR CONDITIONING/REFRIGERATION (ACR)

## (Wallace Campus, Sparks Campus and Ventress Correctional Facility)

Credit Hours

3

This program provides training in which students gain the skills, knowledge, and experience for employment in Heating Ventilation, Air Conditioning, and Refrigeration (HVAC/R) occupations.

The student will acquire techniques and skills necessary to install, maintain, repair, or replace HVAC/R equipment. The student will have the opportunity to learn various phases of the fundamental principles of controls and electrical systems associated with HVAC/R. Courses focus on residential and light commercial HVAC/R systems.

Students who complete all courses listed in the curriculum will be awarded an associate in applied science degree in Air Conditioning/Refrigeration. Admission is conditional and depends on the student's ability to perform the essential functions identified for this program. Reasonable accommodations are considered.

## **DEGREE CURRICULUM** (Wallace and Sparks Campuses)

ACR 149 Heat Pump Systems II

Courses

Area I:	Written and Oral Communications	6
ENG 10	1 English Composition I	3
SPH 10	6 Fundamentals of Oral Communication <b>OR</b>	
SPH 10	Fundamentals of Public Speaking	3
Area II:	Humanities and Fine Arts Humanities/Fine Arts Elective	<b>3</b> 3
Area III:	Natural Sciences, Mathematics, and	
	Computer Science	9
CIS 14	6 Microcomputer Applications	3
MTH 11	6 Mathematical Applications	3
	Science/Computer Science/Math Elective	3
Area IV:	History, Social, and Behavioral Sciences	3
PSY 20		3
Area V:	Career and Technical Courses	47-49
Required	Orientation Courses	
Required ORI 10		
	Orientation to College <b>OR</b> Orientation and Student Success	1-3
ORI 10 ORI 10 ORI 10	Orientation to College <b>OR</b> Orientation and Student Success WorkKeys® Assessment and Advisement	1-3
ORI 10 ORI 10 ORI 10 Required	Orientation to College <b>OR</b> Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses	
ORI 10 ORI 10 ORI 10 Required WKO 11	1 Orientation to College <b>OR</b> 5 Orientation and Student Success 4 WorkKeys® Assessment and Advisement 6 Field of Concentration Courses 7 NCCER Core	3
ORI 10 ORI 10 ORI 10 <b>Requirea</b> WKO 11 ACR 11	Orientation to College <b>OR</b> Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration	1 3 3
ORI 10 ORI 10 ORI 10 <b>Required</b> WKO 11 ACR 11 ACR 11	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures	3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11	Orientation to College <b>OR</b> Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices	1 3 3 3 3
ORI 10 ORI 10 ORI 10 <b>Required</b> WKO 11 ACR 11 ACR 11 ACR 11 ACR 11	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems	3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R	1 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 11 ACR 12 ACR 12	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R HVAC/R Electrical Circuits	1 3 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 11 ACR 11	1 Orientation to College OR 5 Orientation and Student Success 4 WorkKeys® Assessment and Advisement 6 Field of Concentration Courses 7 NCCER Core 8 Principles of Refrigeration 9 HVAC/R Service Procedures 9 Fundamentals of Gas Heating Systems 1 Principles of Electricity for HVAC/R 2 HVAC/R Electrical Circuits	3 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 12 ACR 12 ACR 12 ACR 12	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R HVAC/R Electrical Circuits HVAC/R Electrical Components HVAC/R Electric Motors	3 3 3 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 12 ACR 12 ACR 12 ACR 12 ACR 12 ACR 13	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R HVAC/R Electrical Circuits HVAC/R Electrical Components HVAC/R Electric Motors Residential Air Conditioning	3 3 3 3 3 3 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 12 ACR 12 ACR 12 ACR 12 ACR 13 ACR 13	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R HVAC/R Electrical Circuits HVAC/R Electrical Components HVAC/R Electric Motors Residential Air Conditioning Ice Machines	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
ORI 10 ORI 10 ORI 10 Required WKO 11 ACR 11 ACR 11 ACR 11 ACR 12 ACR 12 ACR 12 ACR 12 ACR 12 ACR 13	Orientation to College OR Orientation and Student Success WorkKeys® Assessment and Advisement Field of Concentration Courses NCCER Core Principles of Refrigeration HVAC/R Service Procedures Refrigeration Piping Practices Fundamentals of Gas Heating Systems Principles of Electricity for HVAC/R HVAC/R Electrical Circuits HVAC/R Electrical Components HVAC/R Electric Motors Residential Air Conditioning Ice Machines Refrigerant Transition and Recovery Theory	3 3 3 3 3 3 3 3 3 3 3 3 3

ACR 203	Commercial Refrigeration	3
WKO 106	Workplace Skills	3
	<b>Total Field of Concentration Credits</b>	48
	Total Credits for Degree	71-73

			Applied Science d Course Seque	_	
FIRST	SEMESTER	SECO!	ND SEMESTER	THIRI	D SEMESTER
ACR	111	ACR	122	ACR	147
ACR	112	ACR	148	ACR	127
ACR	121	ACR	149	ACR	134
ORI	101 or 105	ORI	104	SPH	106 or 107
FOUR	TH SEMESTER	FIFTH	I SEMESTER	SIXTE	I SEMESTER
ACR	123	ACR	132	ACR	113
ENG	101	ACR	119	ACR	203
MTH	116	CIS	146	PSY	200
WKO	110	Human	ities/Fine Arts	Science	e/Computer/
		Elect	tive	Mat	h Elective
				WKO	106

## **CERTIFICATE CURRICULUM** (Wallace and Sparks Campuses)

Courses	Credit I	Hours
Area I:	Written and Oral Communications	6
ENG 101	English Composition I	3
SPH 106	Fundamentals of Oral Communication <b>OR</b>	
SPH 107	Fundamentals of Public Speaking	3
Area III:	Natural Sciences, Mathematics, and	
	Computer Science	6
CIS 146	Microcomputer Applications	3
MTH 116	Mathematical Applications	3
Area V:	Career and Technical Courses	47
Required O	rientation Courses	
ORI 101	Orientation to College	1
ORI 104	WorkKeys® Assessment and Advisement	1
Required F	ield of Concentration Courses	
WKO 110	NCCER Core	3
ACR 111	Principles of Refrigeration	3
ACR 112	HVAC/R Service Procedures	3
ACR 113	Refrigeration Piping Practices	3
ACR 119	Fundamentals of Gas Heating Systems	3
ACR 121	Principles of Electricity for HVAC/R	3
ACR 122	HVAC/R Electrical Circuits	3
ACR 123	HVAC/R Electrical Components	3
ACR 127	HVAC/R Electric Motors	3
ACR 132	Residential Air Conditioning	3
ACR 134	Ice Machines	3
ACR 147	Refrigerant Transition and Recovery Theory	3
ACR 148	Heat Pump Systems I	3
ACR 149	Heat Pump Systems II	3

ACR 203 Commercial Refrigeration Total Field of Concentration Credits Total Credits for Certificate	3 Air Conditioning/Refrigeration 45 Short Certificate (Ventress) 59 Suggested Course Sequence
Air Conditioning/Refrigeration Certificate Suggested Course Sequence	FIRST SEMESTER         SECOND SEMESTER         THIRD SEMESTER           ACR 111         ACR 122         ACR 119           ACR 113         ACR 123         ACR 120           ACR 121         ACR 127         ACR 148           ACR 147         ACR 210         ACR 149
FIRST SEMESTER         SECOND SEMESTER         THIRD SEMESTER           ACR 111         ACR 122         ACR 147           ACR 112         ACR 148         ACR 127           ACR 121         ACR 149         ACR 134           ORI 101 or 105         ORI 104         SPH 106 or 10           FOURTH SEMESTER         FIFTH SEMESTER         SIXTH SEMEST           ACR 123         ACR 132         ACR 113           WKO 110         ACR 119         ACR 203	SHORT CERTIFICATE CURRICULUM (Wallace and Sparks Campuses)  Courses Area V: Required Field of Concentration Courses 27
MTH 116 CIS 146 PHS 111 ENG 101  SHORT CERTIFICATE CURRICULUM (Ventress Correctional Facility)  Course Credit H Area V: Career and Technical Courses	ACR 119 Fundamentals of Gas Heating Systems  ACR 121 Principles of Electricity for HVAC/R  ACR 122 HVAC/R Electrical Circuits  ACR 123 HVAC/R Electrical Components  ACR 147 Refrigerant Transition and Recovery Theory  ACR 148 Heat Pumps I  ACR 149 Heat Pumps II  Total Credits for Short Certificate  3  Total Credits for Short Certificate
Core Air Conditioning Course Requirements  ACR 111 Principles of Refrigeration  ACR 113 Refrigeration Piping Practices  ACR 121 Principles of Electricity for HVAC/R  ACR 147 Refrigerant, Transition and Recovery Theory  Total Core Technical Credits	3 3 3 Short Certificate 3 Suggested Course Sequence 3 12 FIRST SEMESTER ACR 111 ACR 122 ACR 147
After completing the Core Technical Course Requirem students may choose from the following concentrations:	1CD 110
ELECTRICAL CONCENTRATION (ACE)  ACR 122 HVAC/R Electrical Circuits  ACR 123 HVAC/R Electrical Components  ACR 127 HVAC/R Electric Motors  ACR 210 Troubleshooting HVAC/R Systems  Total Concentration Credits  Total Credits for Short Certificate	3 3 3 3 12 24
HEATING CONCENTRATION (ACH)  ACR 119 Fundamentals of Gas Heating Systems  ACR 120 Fundamentals of Electric Heating Systems  ACR 148 Heat Pump Systems I  ACR 149 Heat Pump Systems II  Total Concentration Credits	3 3 3 3 12

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**Total Credits for Short Certificate**