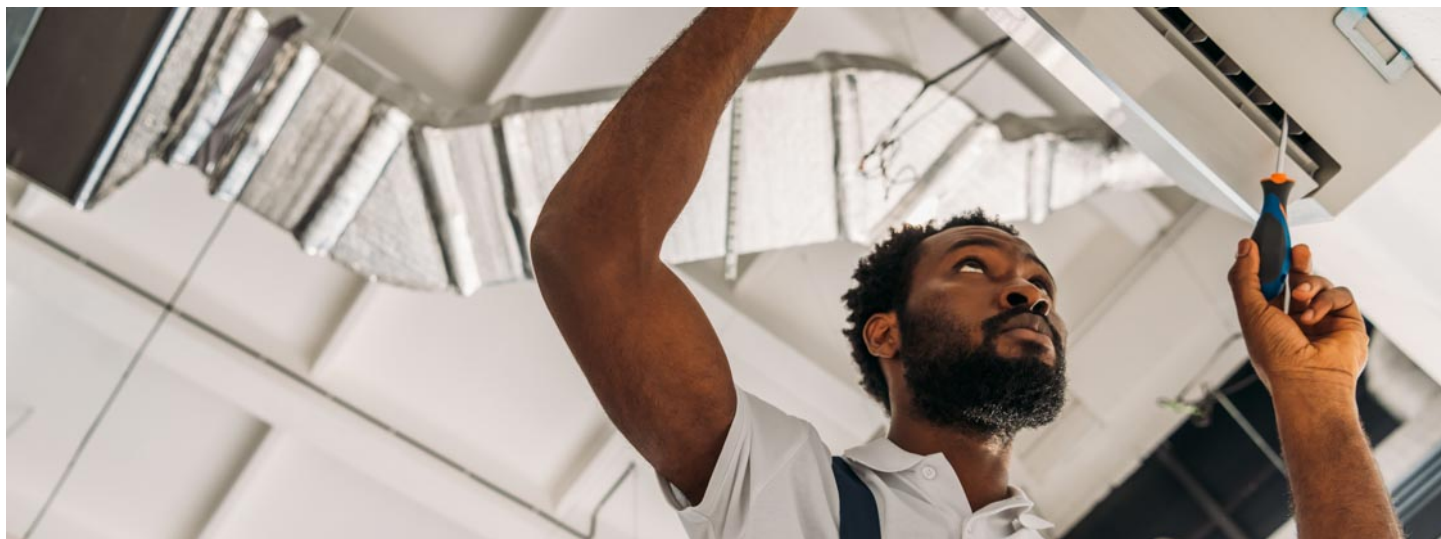


# AIR CONDITIONING AND REFRIGERATION, ASSOCIATE IN APPLIED SCIENCE



College(s): KK

Program Code: 0117

The Associate in Applied Science degree in Air Conditioning and Refrigeration studies the design, selection, maintenance, testing and installation of residential and commercial air conditioning, refrigeration and heating and ventilation systems, and business skills. The degree can lead to self-employment or employment as an assistant to engineers in an industrial or business facility, air conditioning and refrigeration mechanic, furnace installer, oil burner mechanic or a gas furnace mechanic with cooling and heating dealers, contractors, or utility companies.

## Program Requirements

Code	Title	Hours
<b>General Education Coursework</b>		
ENGLISH 101	Composition	3
Additional General Education Courses <sup>1,2</sup>		12
<b>Required Program Core</b>		
AIR CON 101	Intro Air Conditioning I	3
AIR CON 102	Intro Air Conditioning II	3
AIR CON 103	Duct Design And Layout	3
AIR CON 104	Equipment and Systems Controls	3
AIR CON 105	Owner-Contractor Management	3
AIR CON 120	Introductory Laboratory	2
AIR CON 150	Intro To Refrigeration	3
AIR CON 151	Commercial Refrigeration	3
AIR CON 155	Refrigeration Laboratory	2
AIR CON 158	Commercial Refrigeration Laboratory	2
AIR CON 160	Intro to Principles of Heating	3
AIR CON 165	Heating Laboratory	2

AIR CON 204	Advanced Control Systems	3
MATH 107	Math For Technicians I (or Advanced Mathematics course)	4

### Program Electives

Select a minimum of 7 credit hours of the following:		7
AIR CON 106	Sheet Metal I	
AIR CON 107	Welding I	
AIR CON 121	Advanced Laboratory	
AIR CON 156	Domestic Refrigeration Laboratory	

Total Hours	61
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1

Select an additional 12 hours of general education courses from Communications, Fine Arts &amp; Humanities, Mathematics, Social &amp; Behavioral Sciences, or Physical &amp; Life Sciences.

2

At least one course must meet the Human Diversity (HD) requirement

## Pathway

This is an **example course sequence** for students interested in pursuing Air Conditioning and Refrigeration. It does not represent a contract, nor does it guarantee course availability. If this pathway is followed as outlined, you will earn Basic Certificates (BCs) in Commercial Refrigeration, Domestic Refrigeration, and Heating, and an Advanced Certificate and an Associate in Applied Science (AAS) degree in Air Conditioning and Refrigeration. One course will satisfy the Human Diversity (HD) requirement, and is labeled with an (HD) in the sequence below.

## Semester-by-Semester Program Plan for Full-Time Students

All plans can be modified to fit the needs of part-time students by adding more semesters.

Course	Title	Hours
<b>Semester 1</b>		
AIR CON 104	Equipment and Systems Controls	3
AIR CON 150	Intro To Refrigeration	3
AIR CON 160	Intro to Principles of Heating	3
MATH 107	Math For Technicians I	4
AIR CON 106 or AIR CON 107	Sheet Metal I <sup>2</sup> or Welding I	3
Hours		16
<b>Semester 2</b>		
Mathematics or Life Sciences or Physical Sciences course <sup>1</sup>		3
ENGLISH 101	Composition <sup>1</sup>	3
AIR CON 101	Intro Air Conditioning I	3
AIR CON 102	Intro Air Conditioning II	3
AIR CON 151	Commercial Refrigeration	3
AIR CON 165	Heating Laboratory	2
Hours		17
<b>Semester 3</b>		
AIR CON 103	Duct Design And Layout	3
AIR CON 120	Introductory Laboratory	2
AIR CON 204	Advanced Control Systems	3
Social and Behavioral Sciences course (HD) <sup>1</sup>		3
AIR CON 107 or AIR CON 121	Welding I <sup>2</sup> or Advanced Laboratory	2-3
Hours		13-14
<b>Semester 4</b>		
Fine Arts & Humanities course <sup>1</sup>		3
Social and Behavioral Sciences course (HD) <sup>1</sup>		3
AIR CON 105	Owner-Contractor Management	3
AIR CON 155	Refrigeration Laboratory	2
AIR CON 158	Commercial Refrigeration Laboratory	2
AIR CON 107 or AIR CON 121	Welding I <sup>2</sup> or Advanced Laboratory	2-3
Hours		15-16
Total Hours		61-63

<sup>1</sup>  
General Education Requirements

<sup>2</sup>  
Program Elective (p. 2) (minimum 7 hours total)

### Program Electives Associate in Applied Science Electives

Code	Title	Hours
AIR CON 106	Sheet Metal I	3
AIR CON 107	Welding I	3
AIR CON 121	Advanced Laboratory	2
AIR CON 156	Domestic Refrigeration Laboratory	2

Choose your courses with your College Advisor.

## Careers

This program can prepare students for the jobs listed below. Click on each one to learn more, including average earnings, annual job openings, and how much education people in that field have. For additional

guidance and resources on career options, current City Colleges students and alumni can contact the Career Services Office (<https://www.ccc.edu/departments/Pages/Career-Services.aspx>).

## Heating, Air Conditioning, and Refrigeration Mechanics and Installers Job Description

Install or repair heating, central air conditioning, HVAC, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.

### Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Emsi earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

#### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$28,205
Median 50 <sup>th</sup> Percentile	\$57,149
Senior-Level 90 <sup>th</sup> Percentile	\$103,636

#### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$14
Median 50 <sup>th</sup> Percentile	\$27
Senior-Level 90 <sup>th</sup> Percentile	\$50

### Annual Job Openings

423 annual openings in Cook County

### National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	16.80%
A certificate	54.50%
Some college	6.31%
An Associate degree	15.70%
A Bachelor's degree	6.67%
A Master's or Professional degree	0.00%
A Doctoral degree or more	0.00%

6.67% continue their education beyond an associate degree