# *Air Conditioning, Heating and Refrigeration Technology*

A35100 (*Associate Degree)* D35100A *(Diploma)* C35100A *(Certificate)* C35100B *(Certificate)*

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 AAS 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. AAS degree graduates should be able to demonstrate an understanding of system selection and balance and advanced systems

***In addition to the courses listed below, students may be required to take transition/co-requisite classes based on RISE criteria. These classes do not count toward hours required for graduation.***

| Title | | | Class/Lab/Credit | | |
|---|---|---|---|---|---|
| *I. General Education Courses* | | | | | |
| COM | 120 | Interpersonal Communications | 3 | 0 | 3 |
| or | | | | | |
| COM | 231 | Public Speaking | 3 | 0 | 3 |
| ENG | 111 | Expository Writing | 3 | 0 | 3 |
| MAT | 143 | Quantitative Literacy | 2 | 2 | 3 |
| Select one course each from Humanities/Fine Arts and Social/Behavioral Sciences on page 79 | | | | | |
| *II. Major Core Courses* | | | | | |
| AHR | 110 | Intro. to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |
| AHR | 114 | Heat Pump Technology | 2 | 4 | 4 |
| AHR | 130 | HVAC Controls | 2 | 2 | 3 |
| AHR | 211 | Residential System Design | 2 | 2 | 3 |
| AHR | 212 | Advanced Comfort Systems | 2 | 6 | 4 |
| AHR | 213 | HVACR Building Code | 1 | 2 | 2 |
| *III. Other Major Courses* | | | | | |
| Take 8 credits | | | | | |
| AHR | 180 | HVACR Customer Relations | 1 | 0 | 1 |
| BPR | 135 | Schematics and Diagrams | 2 | 0 | 2 |
| ELC | 128 | Introduction to PLC | 2 | 2 | 3 |
| ISC | 112 | Industrial Safety | 2 | 0 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| WBL | 111 | Work-Based Learning I | 0 | 10 | 1 |
| WBL | 112 | Work-Based Learning I | 0 | 20 | 2 |
| WBL | 113 | Work-Based Learning I | 0 | 30 | 3 |
| WBL | 114 | Work-Based Learning I | 0 | 40 | 4 |
| WBL | 121 | Work-Based Learning II | 0 | 10 | 1 |
| WBL | 122 | Work-Based Learning II | 0 | 20 | 2 |
| WBL | 123 | Work-Based Learning II | 0 | 30 | 3 |
| WBL | 124 | Work-Based Learning II | 0 | 40 | 4 |
| WBL | 131 | Work-Based Learning III | 0 | 10 | 1 |
| WBL | 132 | Work-Based Learning III | 0 | 20 | 2 |
| WBL | 133 | Work-Based Learning III | 0 | 30 | 3 |
| WBL | 134 | Work-Based Learning III | 0 | 40 | 4 |
| WBL | 211 | Work-Based Learning IV | 0 | 10 | 1 |
| WBL | 212 | Work-Based Learning IV | 0 | 20 | 2 |
| WBL | 213 | Work-Based Learning IV | 0 | 30 | 3 |
| WBL | 214 | Work-Based Learning IV | 0 | 40 | 4 |

Take 12 credits

| | | | | | |
|---|---|---|---|---|---|
| AHR | 115 | Introducation to Refrigeration | 1 | 3 | 2 |
| AHR | 160 | Refrigerant Certification | 1 | 0 | 1 |
| CIS | 110 | Introduction to Computers | 2 | 2 | 3 |
| EGR | 125 | Application Software for Tech | 1 | 2 | 2 |
| REF | 117 | Refrigeration Controls | 2 | 6 | 4 |

*IV. Other Required Courses*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 115 | Success and Study Skills | 0 | 2 | 1 |
| ACA | 220 | Professional Transition | 1 | 0 | 1 |

*Total Credits:* 69

## *Recommended Semester Schedule*

*First Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 115 | Success and Study Skills | 0 | 2 | 1 |
| AHR | 110 | Intro. to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| ISC | 112 | Industrial Safety | 2 | 0 | 2 |
| ENG | 111 | Writing and Inquiry | 3 | 0 | 3 |

*First Year-Spring*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |
| AHR | 130 | HVAC Controls | 2 | 2 | 3 |
| ELC | 128 | Intro to PLC | 2 | 3 | 3 |

*First Year-Summer*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 114 | Heat Pump Technology | 2 | 4 | 4 |
| AHR | 115 | Refrigeration Systems | 1 | 3 | 2 |

*Second Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 160 | Refrigerant Certification | 1 | 0 | 1 |
| AHR | 180 | HVACR Customer Relations | 1 | 0 | 1 |
| AHR | 212 | Advanced Comfort Systems | 2 | 6 | 4 |
| AHR | 213 | HVACR Building Code | 1 | 2 | 2 |
| EGR | 125 | Appl Software for Tech | 1 | 2 | 2 |
| MAT | 143 | Quantitative Literacy | 2 | 2 | 3 |

*Second Year-Spring*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 211 | Residential System Design | 2 | 2 | 3 |
| BPR | 135 | Schematics and Diagrams | 2 | 0 | 2 |
| CIS | 110 | Introduction to Computers | 2 | 2 | 3 |
| COM 120 | | Interpersonal Communications | 3 | 0 | 3 |
| Elective | | Social/Behavior Science | 3 | 0 | 3 |

*Second Year-Summer*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 220 | Professional Transition | 1 | 0 | 1 |
| REF | 117 | Refrigeration Controls | 2 | 6 | 4 |
| Elective | | Humanities/Fine Arts | 3 | 0 | 3 |

*Note:* WBL 111, 112, 113, 114, 121, 122, 123, 124, 131, 132, 133, 134, 211, 212, 213, 214 may count for any of the following: ELC 128, AHR 115, REF 117, AHR 160, AHR 180, EGR 125, BPR 135, ISC 112, AHR 130

## *Air Conditioning, Heating and Refrigeration Technology Diploma Program (D35100)*

| Title | | | Class/Lab/Credit | | |
|---|---|---|---|---|---|
| *I. General Education Courses* | | | | | |
| ENG | 111 | Writing and Inquiry | 3 | 0 | 3 |
| MAT | 143 | Quantitative Literacy | 2 | 2 | 3 |
| *II. Major Courses* | | | | | |
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |
| AHR | 114 | Heat Pump Technology | 2 | 4 | 4 |
| AHR | 130 | HVAC Controls | 2 | 2 | 3 |
| AHR | 211 | Residential System Design | 2 | 2 | 3 |
| AHR | 213 | HVACR Building Code | 1 | 2 | 2 |

*III. Other Major Courses*

Take 8 credits

| | | | | | |
|---|---|---|---|---|---|
| AHR | 160 | Refrigeration Certificate | 1 | 0 | 1 |
| BPR | 135 | Schematics and Diagrams | 2 | 0 | 2 |
| CIS | 110 | Introduction to Computers | 2 | 2 | 3 |
| ISC | 112 | Industrial Safety | 2 | 0 | 2 |
| WBL | 111 | Work-Based Learning I | 0 | 10 | 1 |
| WBL | 112 | Work-Based Learning I | 0 | 20 | 2 |
| WBL | 121 | Work-Based Learning II | 0 | 10 | 1 |
| WBL | 122 | Work-Based Learning II | 0 | 20 | 2 |
| WBL | 131 | Work-Based Learning III | 0 | 10 | 1 |
| WBL | 132 | Work-Based Learning III | 0 | 20 | 2 |
| WBL | 211 | Work-Based Learning IV | 0 | 10 | 1 |
| WBL | 212 | Work-Based Learning IV | 0 | 20 | 2 |

*IV. Other Required Courses*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 115 | Success and Study Skills | 0 | 2 | 1 |
| ACA | 220 | Professional Transition | 1 | 0 | 1 |

*Total Credits: 44*

## *Recommended Semester Schedule*

*First Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 115 | Success and Study Skills | 0 | 2 | 1 |
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 160 | Refrigeration Certification | 1 | 0 | 1 |

*First Year-Spring*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |
| AHR | 130 | HVAC Controls | 2 | 2 | 3 |
| AHR | 211 | Residential System Design | 2 | 2 | 3 |
| BPR | 135 | Schematics and Diagrams | 2 | 0 | 2 |

*First Year-Summer*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 114 | Heat Pump Technology | 2 | 4 | 4 |
| CIS | 110 | Introduction to Computers | 2 | 2 | 3 |
| MAT | 143 | Quantitative Literacy | 2 | 2 | 3 |

*Second Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| ACA | 220 | Professional Transition | 1 | 0 | 1 |
| AHR | 213 | HVACR Building Code | 1 | 2 | 2 |
| ENG | 111 | Writing and Inquiry | 3 | 0 | 3 |
| ISC | 112 | Industrial Safety | 2 | 0 | 2 |

| Title | | | Class/Lab/Credit | | |
|---|---|---|---|---|---|
| *I. Major Courses* | | | | | |
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 112 | Heating Technology | 2 | 4 | 4 |

*Total Credits: 12*

## *Recommended Semester Schedule*

*First Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |

*First Year-Spring*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 112 | Heating Technology | 2 | 4 | 4 |

## *Air Conditioning, Heating and Refrigeration Technology Certificate Program (C35100B) Level II*

| Title | | | Class/Lab/Credit | | |
|---|---|---|---|---|---|
| *I. Major Courses* | | | | | |
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |
| AHR | 160 | Refrigeration Certification | 1 | 0 | 1 |

*Total Credits: 17*

## *Recommended Semester Schedule*

*First Year-Fall*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 110 | Introduction to Refrigeration | 2 | 6 | 5 |
| AHR | 111 | HVACR Electricity | 2 | 2 | 3 |
| AHR | 160 | Refrigeration Certification | 1 | 0 | 1 |

*First Year-Spring*

| | | | | | |
|---|---|---|---|---|---|
| AHR | 112 | Heating Technology | 2 | 4 | 4 |
| AHR | 113 | Comfort Cooling | 2 | 4 | 4 |