

# CONSTRUCTION TECHNOLOGY - RENEWABLE ENERGY TECHNOLOGY - HVAC/ R, CERTIFICATE OF ACHIEVEMENT (LEVEL II)

NMC Code 066

This certificate is designed for someone with introductory interest or for someone who is currently working in the HVAC/R career field and wants to enhance their job prospects. With a very narrow focus on the fundamentals of renewable energy, the specific applications as related to HVAC/R, and a few HVAC/R courses, the individual who completes this certificate will greatly enhance their job market skills. Information: (231) 995-2777.

Within this degree students will have the opportunity to earn the following: Mechanical Contractor License.

## Requirements Certificate Requirements

| Course                                    | Title   | Credits      |
|---|---|--------------|
| MTH 111<br>or MTH 120                     | Intermediate Algebra<br>Mathematical Explorations | 3-4          |
| CAR 100                                   | Introductory Craft Skills                         | 2            |
| EGY 105                                   | Sustainable Building Design                       | 3            |
| EGY 115                                   | Residential Energy Efficiency                     | 3            |
| EGY 145                                   | Geothermal Technology                             | 3            |
| HVA 101                                   | Introduction to HVAC/R                            | 3            |
| HVA 106                                   | Fundamentals of Heating                           | 3            |
| HVA 122                                   | Refrigeration Fundamentals                        | 3            |
| HVA 126                                   | Residential and Commercial A/C                    | 3            |
| HVA 132                                   | Commercial A/C & Refrigeration                    | 3            |
| HVA 136                                   | EPA Certification                                 | 3            |
| Approved Construction Technology Elective |   | 3            |
| <b>Total Credits</b>                      |   | <b>35-36</b> |

## Approved Electives

| Course  | Title                                     | Credits |
|---------|---|---------|
| CAR 101 | Introduction to Carpentry                 | 3       |
| CAR 102 | Intro to Woodworking                      | 3       |
| CAR 103 | Construction Blueprint Reading            | 3       |
| CAR 105 | Foundations and Framing                   | 3       |
| CAR 121 | Exterior Construction                     | 3       |
| CAR 125 | Interior Construction <sup>1</sup>        | 3       |
| CMT 107 | Construction Supervision                  | 4       |
| CMT 207 | Construction Cost Estimating <sup>1</sup> | 3       |
| EET 103 | Electrical Studies I <sup>1</sup>         | 3       |
| EET 204 | Electrical Studies II <sup>1</sup>        | 3       |
| EET 221 | Industrial Controls <sup>1</sup>          | 3       |

|         |   |   |
|---------|---|---|
| EET 232 | Programmable Logic Controllers <sup>1</sup> | 3 |
| EET 233 | PLC Applications I <sup>1</sup>             | 3 |
| EET 234 | PLC Applications II <sup>1</sup>            | 3 |
| EGY 105 | Sustainable Building Design                 | 3 |
| EGY 115 | Residential Energy Efficiency               | 3 |
| EGY 145 | Geothermal Technology <sup>1</sup>          | 3 |
| ELE 101 | Introduction to Electrical                  | 3 |
| ELE 105 | Residential Electrical <sup>1</sup>         | 3 |
| ELE 110 | Electrical Code Studies I <sup>1</sup>      | 3 |
| ELE 111 | Electrical Code Studies II <sup>1</sup>     | 3 |
| ELE 121 | Adv Residential Electrical <sup>1</sup>     | 3 |
| ELE 125 | Pre-Commercial Electrical <sup>1</sup>      | 3 |
| ELE 131 | Commercial Electrical <sup>1</sup>          | 3 |
| ELE 135 | Adv Commercial Electrical <sup>1</sup>      | 3 |
| ELE 142 | Industrial Electrical <sup>1</sup>          | 3 |
| ELE 146 | Adv. Industrial Electrical <sup>1</sup>     | 3 |
| HVA 101 | Introduction to HVAC/R                      | 3 |
| HVA 106 | Fundamentals of Heating <sup>1</sup>        | 3 |
| HVA 122 | Refrigeration Fundamentals <sup>1</sup>     | 3 |
| HVA 126 | Residential and Commercial A/C <sup>1</sup> | 3 |
| HVA 132 | Commercial A/C & Refrigeration <sup>1</sup> | 3 |
| HVA 136 | EPA Certification <sup>1</sup>              | 3 |
| PLU 101 | Introduction to Plumbing                    | 3 |
| PLU 105 | Plumbing Components <sup>1</sup>            | 3 |
| PLU 121 | Commercial Plumbing <sup>1</sup>            | 3 |
| PLU 125 | Plumbing Installation <sup>1</sup>          | 3 |
| UAS 141 | Remote Pilot Flight                         | 3 |
| SVR 111 | Intro to Field Surveying                    | 2 |
| SVR 112 | Intro to Surveying Data Use                 | 3 |
| UAS 211 | Commercial Drone Operations <sup>1</sup>    | 3 |
| UAS 241 | Advanced Drone Operations <sup>1</sup>      | 3 |

<sup>1</sup>

Denotes courses with required prerequisites.

## Course Sequence Guide

| Course                                    | Title  | Credits      |
|---|--|--------------|
| <b>Year 1</b>                             |  |              |
| <b>Fall</b>                               |  |              |
| CAR 100                                   | Introductory Craft Skills                            | 2            |
| HVA 101                                   | Introduction to HVAC/R                               | 3            |
| HVA 106                                   | Fundamentals of Heating                              | 3            |
| EGY 115                                   | Residential Energy Efficiency (Fall only)            | 3            |
| <b>Credits</b>                            |  | <b>11</b>    |
| <b>Spring</b>                             |  |              |
| MTH 111<br>or MTH 120                     | Intermediate Algebra<br>or Mathematical Explorations | 3-4          |
| HVA 122                                   | Refrigeration Fundamentals                           | 3            |
| HVA 126                                   | Residential and Commercial A/C                       | 3            |
| Approved Construction Technology Elective |  | 3            |
| <b>Credits</b>                            |  | <b>12-13</b> |

**Year 2**

**Fall**

|                      |   |              |
|----------------------|---|--------------|
| EGY 105              | Sustainable Building Design (Fall only) | 3            |
| EGY 145              | Geothermal Technology                   | 3            |
| HVA 132              | Commercial A/C & Refrigeration          | 3            |
| HVA 136              | EPA Certification                       | 3            |
| <b>Credits</b>       |   | <b>12</b>    |
| <b>Total Credits</b> |   | <b>35-36</b> |

The responsibility for determining the transferability of this degree and courses to another institution is the sole responsibility of the student.