Kentucky CTE

# Advanced Manufacturing: Industrial Maintenance Technology: Cooling and Dehumidification (for Industrial Maint.) 470361 (2026–2027)


Practice and perform safe shop procedures at all times. 1

1 Practice and perform safe shop procedures at all times. 1

Apply the technical math required for employment opportunities in maintenance. 2

2 Apply the technical math required for employment opportunities in maintenance. 2

Perform all duties with emphasis on integrity, responsibility, quality, discipline and teamwork. 3

3 Perform all duties with emphasis on integrity, responsibility, quality, discipline and teamwork. 3

Describe air conditioning. 4

4 Describe air conditioning. 4

List the benefits of “conditioned” air. 5

5 List the benefits of “conditioned” air. 5

Describe some of today’s current issues regarding air conditioning—industry concerns and future ramifications. 6

6 Describe some of today’s current issues regarding air conditioning—industry concerns and future ramifications. 6


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| Describe the difference between split systems and package systems. 7 | 7 Describe the difference between split systems and package systems. 7 |
| Describe the sequence of the basic refrigeration cycle and operation of the air conditioning system. 8 | 8 Describe the sequence of the basic refrigeration cycle and operation of the air conditioning system. 8 |
| Use and read various tools and instrumentation needed for checking, testing, and operating air conditioning systems. 9 | 9 Use and read various tools and instrumentation needed for checking, testing, and operating air conditioning systems. 9 |
| Define the types of condensers: air-cooled, water-cooled, and evaporative. 10 | 10 Define the types of condensers: air-cooled, water-cooled, and evaporative. 10 |
| Adjust the airflow for proper temperature difference. 11 | 11 Adjust the airflow for proper temperature difference. 11 |
| Describe the maintenance of a condenser and a cooling tower. 12 | 12 Describe the maintenance of a condenser and a cooling tower. 12 |
| Analyze air conditioning systems and appropriately diagnose electrical and/or mechanical problems. 13 | 13 Analyze air conditioning systems and appropriately diagnose electrical and/or mechanical problems. 13 |
| Demonstrate good customer relations in a classroom simulation. 14 | 14 Demonstrate good customer relations in a classroom simulation. 14 |
| Ex[illegible] of [illegible] ins[illegible] | Explain the importance of manufacturers' installation and operation requirements. 15 |

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operation requirements. 15

Determine equipment electrical requirements. 16

16 Determine equipment electrical requirements. 16

Verify equipment airflow and distribution requirements. 17

17 Verify equipment airflow and distribution requirements. 17

Check operation of all electrical components, including control components. 18

18 Check operation of all electrical components, including control components. 18

Demonstrate the use of tools and test equipment. 19

19 Demonstrate the use of tools and test equipment. 19

Check system operation while following all safety procedures. 20

20 Check system operation while following all safety procedures. 20

Follow local codes and ordinances during installation and repair. 21

21 Follow local codes and ordinances during installation and repair. 21

Read and demonstrate an understanding of electrical wiring diagrams. 22

22 Read and demonstrate an understanding of electrical wiring diagrams. 22

Develop a systematic way to diagnose system problems and demonstrate them in class. 23

23 Develop a systematic way to diagnose system problems and demonstrate them in class. 23

Determine the cause of failure in a system. 24

24 Determine the cause of failure in a system. 24

Identify and describe po fai eliminate them. 25

25 Identify and describe possible causes of failure and how to eliminate them. 25

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| Demonstrate the use of tools and test equipment while following safety practices. 26 | 26 Demonstrate the use of tools and test equipment while following safety practices. 26 |
| Verify system operation. 27 | 27 Verify system operation. 27 |
| Write a service report. 28 | 28 Write a service report. 28 |
| Identify types of control systems: electromechanical, pneumatic, electronic, and programmable. 29 | 29 Identify types of control systems: electromechanical, pneumatic, electronic, and programmable. 29 |
| Identify control system components. 30 | 30 Identify control system components. 30 |
| Describe the sequences of operation in all types of control systems. 31 | 31 Describe the sequences of operation in all types of control systems. 31 |
| Construct a schematic diagram using all components necessary to safely operate an air conditioner. 32 | 32 Construct a schematic diagram using all components necessary to safely operate an air conditioner. 32 |
| Program a programmable thermostat for heating, cooling, and heat pump operation, including set up and set back. 33 | 33 Program a programmable thermostat for heating, cooling, and heat pump operation, including set up and set back. 33 |
| Plot and chart psychrometric terms. 34 | 34 Plot and chart psychrometric terms. 34 |
| Describe the operation of electronic air cle | 35 Describe the operation of electronic air cleaners. 35 |

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**Measure pressure drop with a magnetic gauge.** 36

**36 Measure pressure drop with a magnetic gauge.** 36