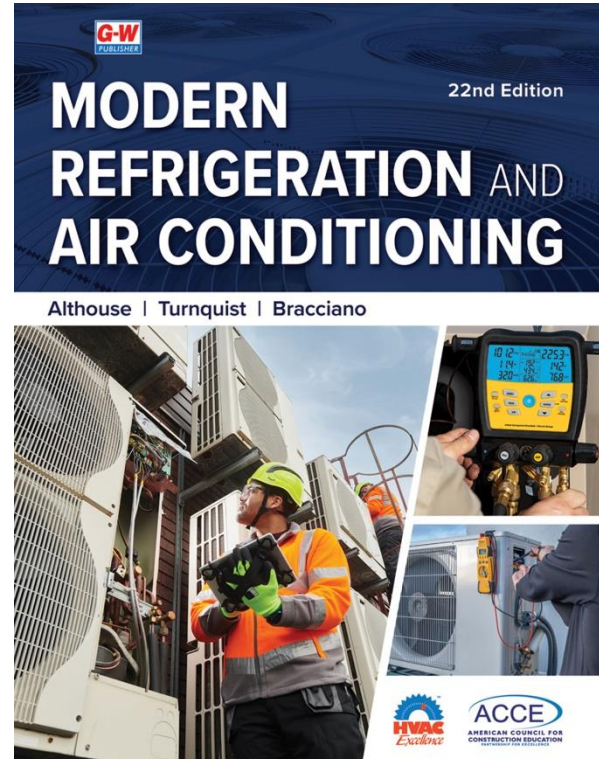


*Correlation of*  
**Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano**  
**(Goodheart-Willcox Publisher ©2025)**  
to  
**AHRI Curriculum Guide II. Principles of Thermodynamics and Heat Transfer**

Goodheart-Willcox is pleased to partner with the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the American Council for Construction Education (ACCE) by correlating *Modern Refrigeration and Air Conditioning* to the AHRI Curriculum Guide. The following chart correlates *Modern Refrigeration and Air Conditioning* to a section of the Curriculum Guide developed by AHRI used for ACCE (formerly PAHRA) accreditation.

The chart lists the Curriculum Guide’s knowledge and task competency objectives in the left column and the corresponding chapter numbers from *Modern Refrigeration and Air Conditioning* in the right column.

For more information on the American Council for Construction Education (ACCE) and related accreditation, please visit:  
[www.acce-hq.org](http://www.acce-hq.org)



<b>II.A. Matter and Heat Behavior</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Define <i>matter</i> and <i>heat</i> .	Chapter 6
2. Explain the direction and rate of heat flow.	Chapter 6
3. Describe the three methods of heat transfer.	Chapter 6
4. Identify the reference points of temperature:	
a. boiling point	Chapter 6
b. freezing point	Chapter 6
c. critical temperature	Chapter 6
d. absolute zero	Chapter 6

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<b>II.A. Matter and Heat Behavior (continued)</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
5. Explain the difference between heat and temperature.	Chapter 6
6. Explain the difference between latent and sensible heat.	Chapter 6
7. Explain the change of state of matter.	Chapter 6
8. Explain heat/cool storage.	Chapters 6, 39
9. Define <i>specific heat</i> .	Chapter 6
10. Define <i>sensible heat</i> .	Chapter 6
11. Define <i>latent heat of fusion</i> .	Chapters 6, 8
12. Define <i>latent heat of vaporization</i> .	Chapters 6, 8
13. Define <i>enthalpy</i> .	Chapters 6, 8, 10
14. Define <i>saturation temperature</i> (dew point temperature).	Chapters 6, 24, 28, 41
15. Define <i>water vapor pressure</i> .	Chapter 24
16. Explain the direction and rate of moisture transfer.	Chapters 6, 24
<b>Task</b>	<b>Textbook Chapter(s)</b>
1. Calculate total heat (in BTUs) a pound of any substance contains.	Chapter 6
<b>II.B. Fluids and Pressures</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain the relationship of pressures and fluids at saturation temperatures.	Chapter 7
2. Explain the relationship between temperature and pressure using the P/T chart.	Chapters 7, 10, 48
3. Define <i>pressure</i> .	Chapter 7
4. Explain atmospheric pressure.	Chapters 7, 11
5. Explain compound gauges.	Chapter 11
6. Explain bourdon tubes.	Chapter 11
7. Explain barometric pressure.	Chapter 11
8. Explain absolute pressure.	Chapters 7, 11
9. Explain gauge pressure.	Chapter 11
10. Explain inches of mercury absolute.	Chapters 7, 11
11. Explain micron.	Chapter 11

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<b>II.B. Fluids and Pressures (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Calculate absolute and gauge pressures.	Chapter 11
2. Measure absolute and gauge pressures.	Chapter 11
3. Relate temperature and pressure using the P/T chart.	Chapters 10, 11, 48
4. Measure a vacuum using a micron gauge.	Chapter 11
<b>II.C. Refrigeration Cycle/Diagrams</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify the four major components of the vapor compression refrigeration system.	Chapters 8, 9, 43, 44, 45
2. Describe the state and conditions of the refrigerant during a cycle.	Chapter 8
3. Explain the effects of:	
a. superheating the suction gases	Chapters 8, 10
b. increasing the condensing pressure	Chapters 8, 10
c. subcooling the liquid	Chapters 8, 10
4. Explain the importance of superheat and subcooling.	Chapters 8, 10
5. Define <i>refrigeration</i> .	Chapters 8, 41
6. Explain the functions of the four major components of a refrigeration system:	
a. compressor	Chapters 8, 9, 43
b. condenser	Chapters 8, 9, 44
c. metering device	Chapters 8, 9, 45
d. evaporator	Chapters 8, 9, 44
7. List the components that separate the high side from the low side of the system.	Chapters 8, 9, 43, 45
8. Describe the temperature/enthalpy (T-H) diagram.	Chapter 10
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Draw a refrigeration cycle on a pressure-enthalpy chart:	
a. diagram a simple refrigeration cycle	Chapters 8, 10, 24
b. state the unit of measurement for heat (BTU/h)	Chapters 6, 8
c. define <i>enthalpy</i> and <i>entropy</i>	Chapters 6, 8
d. show arrows for direction of cycle flow	Chapters 8, 23, 25, 46, 48, 49

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<b>II.C. Refrigeration Cycle/Diagrams (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
e. place accumulator, receiver, and oil separator correctly on refrigeration cycle	Chapters 43, 44, 45
2. Draw a simple refrigerant cycle diagram and label each of the basic components as well as the refrigerant lines. Place arrows on the diagram to show the direction of refrigerant flow.	Chapter 8
3. Calculate problems using temperature/enthalpy (T-H) diagram.	Chapter 10
4. Calculate problems using pressure/enthalpy (P-H) diagram.	Chapter 10
5. Label the line that represents each of the four basic components on a pressure/enthalpy (P-H) diagram.	Chapter 10
<b>II.D. Measurement Systems</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify the four major components of the vapor compression refrigeration system.	Chapters 8, 9, 43, 44, 45
2. Identify US and SI units.	Chapters 6 and 7
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Convert from US to metric units for the following:	
a. length	Chapter 6, Appendix E
b. area	Chapter 6, Appendix E
c. volume	Chapters 6, 7, Appendix E
d. mass	Chapter 6, Appendix E
e. force	Chapter 6, Appendix E
f. velocity	Chapter 6, Appendix E
g. density	Chapters 6, 7, Appendix E
h. pressure	Chapter 7, Appendix E
i. temperature	Chapter 6, Appendix E
j. energy	Chapter 6, Appendix E
k. power	Chapter 6, Appendix E
l. specific heat	Chapter 6, Appendix E
m. volume flow rate	Chapter 6, Appendix E
n. capacity	Chapters 6, 7, Appendix E
2. Convert pounds to ounces.	Chapter 6, Appendix E

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<b>II.D. Measurement Systems</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
3. Convert cooling capacity from tons of refrigeration to kW and Btu/h to kW.	Chapters 6, 35, Appendix E