

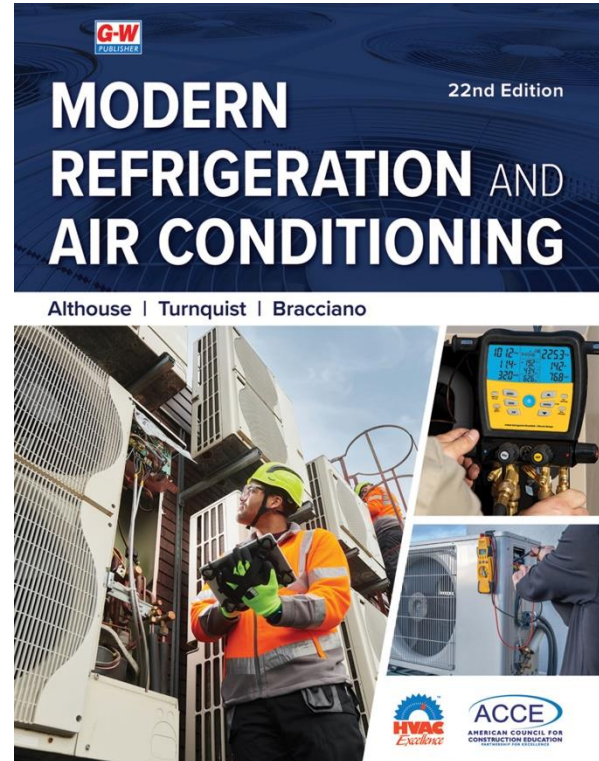


**Correlation of**  
**Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano**  
**(Goodheart-Willcox Publisher ©2025)**  
 to  
**AHRI Curriculum Guide XI. Air-Conditioning Systems**

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>XI.A. Unitary Cooling</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Describe the sequence of the basic refrigeration cycle and operation of the various types of air-conditioning systems.	Chapters 8, 22, 23, 24, 25, 27
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Use and read various tools and instrumentation needed for checking, testing, and operating air-conditioning systems.	Chapters 4, 11, 12, 14, 15, 19, 23, 25, 29

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<b>XI.B. Central Station Systems</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain the basic function of the following components of central station systems:	
a. air distribution systems	Chapters 23, 25, 30
b. expansion tanks	Chapter 38
c. heat recovery systems	Chapters 39, 40, 44
d. water chiller	Chapters 25, 27
e. water cooling tower	Chapters 25, 27, 49
2. Explain the operation of a central station system.	Chapters 8, 22, 23, 27, 39
3. Understand the requirements for system control:	
a. electronic DDC	Chapters 17, 26
b. pneumatic	Chapters 25, 40
c. building systems	Chapters 17, 25, 40, 45
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Draw a piping diagram of a chilled water system:	
a. Two-way control valves	Chapters 27, 45, 49
b. Three-way control valves	Chapters 25, 27, 45, 49
<b>XI.C. Service and Problem Analysis</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain the causes of electrical problems.	Chapters 17, 18, 19, 21, 22, 23, 25, 48, 49, 50
2. Explain the causes of mechanical problems.	Chapters 17, 19, 21, 22, 23, 25, 48, 49, 50
3. Explain the causes of hydronic problems.	Chapters 17, 19, 38
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Analyze air-conditioning systems and appropriately diagnose the electrical and/or mechanical and/or hydronic problems.	Chapters 17, 18, 19, 21, 22, 23, 25, 38, 48, 49, 50
<b>XI.D. Absorption Refrigeration</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain the basic function of the components of the absorption system.	Chapter 27
2. Describe the sequence of operation of the absorption system.	Chapter 27
3. Understand which components of an absorption system can be field-serviced.	Chapters 27, 33

<b>XI.D. Absorption Refrigeration (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Check all “external” components of system for proper operation.	Chapters 27, 33
<b>XI.E. Desiccant Cooling and Dehumidification</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. List the applications of dehumidification.	Chapter 24
2. Describe the methods of desiccant dehumidification.	Chapters 24, 28
3. Describe the benefits of using desiccant dehumidification versus cooling coil dehumidification.	Chapter 24
4. Explain how a desiccant wheel works.	Chapters 23, 24, 30, 31, 40
5. Understand and describe how the four primary variables influence the performance of a desiccant dehumidifier:	
a. air flow	Chapters 23, 24, 25, 28, 29, 30, 31, 33
b. entering humidity level	Chapters 23, 24, 25, 28, 29, 30, 31, 33
c. entering dry bulb temperature	Chapters 23, 24, 25, 28, 29, 30, 31, 33
d. regeneration temperature	Chapters 23, 24, 25, 28, 29, 30, 31, 33
6. Understand basic troubleshooting methods for desiccant systems:	
a. air flow readings	Chapters 23, 24, 25, 28, 29, 30, 31, 33
b. temperature verification	Chapters 23, 24, 25, 28, 29, 30, 31, 33
c. humidity level readings	Chapters 23, 24, 25, 28, 29, 30, 31, 33
d. mass balance calculations	Chapters 23, 24, 25, 28, 29, 30, 31, 33
7. Describe the operation and maintenance of desiccant cooling and dehumidification systems. (Desiccant cycle and physical components)	Chapters 23, 24, 25, 28, 29, 30, 31, 33
8. List the various types of desiccant cooling and dehumidification systems in use today.	Chapters 23, 24, 25, 28, 29, 30, 31, 33
9. Describe how desiccant dehumidifiers are integrated into conventional refrigeration and air-conditioning systems and identify the function of each component in an integrated system.	Chapters 23, 24, 25, 28, 29, 30, 31, 33

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**XI. Air-Conditioning Systems—page 4**

<b>XI.E. Desiccant Cooling and Dehumidification (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Read and use the various tools/instruments needed for checking, testing, and operating a desiccant dehumidifier:	
a. airflow measurement	Chapters 23, 24, 25, 28, 29, 30, 31, 33
b. humidity measurements (wet/dry bulb, dewpoint, relative humidity)	Chapters 23, 24, 25, 28, 29, 30, 31, 33
c. moisture balance calculation	Chapters 23, 24, 25, 28, 29, 30, 31, 33
2. Analyze a desiccant system and determine:	
a. if meeting manufacturers' specifications	Chapters 23, 24, 25, 28, 29, 30, 31, 33
b. potential for improving moisture removal rate	Chapters 23, 24, 25, 28, 29, 30, 31, 33