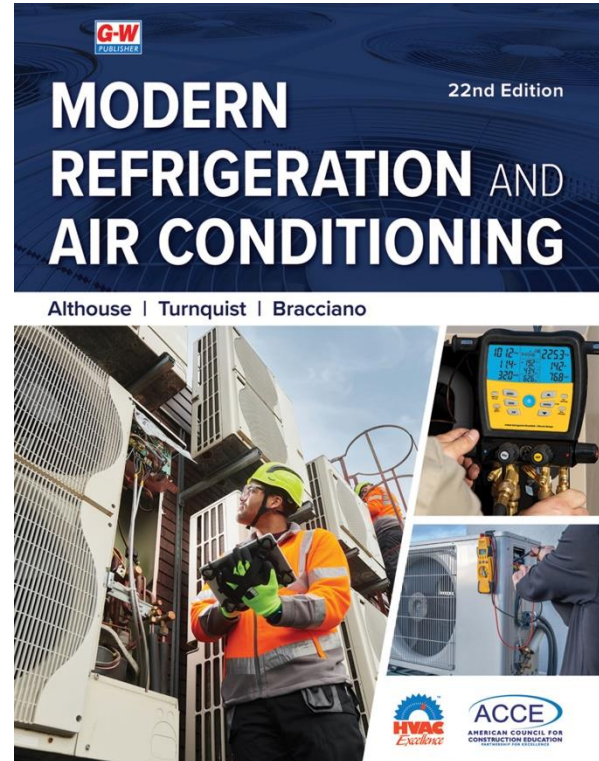


*Correlation of*  
**Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano**  
(Goodheart-Willcox Publisher ©2025)  
to  
**AHRI Curriculum Guide IX. Load Calculations**

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>IX.A. Refrigeration Loads</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Define “U” value: (Btu/hrAft <sup>2</sup> A°F).	Chapters 32, 51
2. Define “K” value: (Btu/hrAft <sup>2</sup> A°F).	Chapters 32, 51
3. Define “C” value: (Btu/hrAft <sup>2</sup> A°F).	Chapters 32, 51
4. Define “R” value: (Btu/hrAft <sup>2</sup> °F/Btu).	Chapters 32, 51
5. Interpret heat transfer tables (“U”, “K,” “C,” “R”).	Chapters 32, 51
6. Explain the heat load sources:	
a. conduction	Chapters 6, 32, 40, 51
b. infiltration (sensible and latent)	Chapters 28, 32, 40, 51

**Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide:  
IX. Load Calculations—page 2**

<b>IX.A. Refrigeration Loads (continued)</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
c. product	Chapters 32, 40, 51
d. miscellaneous loads (people, motor, equipment, sensible and latent)	Chapters 32, 40, 51
e. radiation	Chapters 6, 32, 40, 51
7. Explain the purpose of vapor barriers.	Chapters 32, 40, 51
8. Interpret tables of specific heat values, latent heat, and heat of respiration.	Chapters 32, 40, 51
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Calculate total heating transfer value of any surface (R) – (U).	Chapters 32, 40, 51, 52
<b>IX.B. Psychrometrics</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify the following on a psychrometric chart:	
a. dry bulb line (DB)	Chapters 24, 28
b. wet bulb line (WB)	Chapters 24, 28
c. relative humidity (RH)	Chapters 24, 28
d. dew point (DB)	Chapters 24, 28
e. enthalpy (h)	Chapters 6, 8, 10, 24, 28, 51
f. specific humidity (grains of moisture) or (lbw/lbda)	Chapters 24, 28
g. apparatus dew point	Chapters 10, 24, 28, 52
2. Explain:	
a. specific humidity	Chapters 24, 28
b. apparatus dew point	Chapters 24, 28, 52
c. contact factor	Chapters 44, 52
d. relative humidity	Chapters 22, 24, 28, 30, 52
e. dry bulb	Chapters 24, 28
f. wet bulb	Chapters 24, 28
g. dew point	Chapters 24, 28
h. enthalpy	Chapters 6, 8, 10, 24, 28, 51
i. specific volume	Chapters 7, 28

**Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide:**

**IX. Load Calculations—page 3**

<b>IX.B. Psychrometrics (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Calculate:	
a. refrigeration sensible heat ratio	Chapter 28
b. latent heat ratio	Chapters 6, 10, 30, 39, 51
c. contact factor	Chapters 45, 52
d. latent heat	Chapters 6, 8, 10, 30, 32, 39, 51
e. sensible heat	Chapters 6, 8, 10, 30, 32, 39, 51
f. total heat	Chapters 6, 8, 10, 30, 32, 39, 51
g. water removal	Chapters 6, 8, 10, 24, 30, 32, 39, 51, 52
h. mixed air condition	Chapters 24, 28, 29, 30, 31, 32, 51
2. On a psychrometric chart, plot the following:	
a. sensible heating	Chapters 24, 28
b. sensible cooling	Chapters 24, 25, 28
c. heating and humidifying	Chapters 24, 28
d. heating and dehumidifying	Chapters 24, 28
e. cooling and humidifying	Chapters 24, 25, 28
f. cooling and dehumidifying	Chapters 24, 25, 28
g. humidifying	Chapters 24, 28
h. dehumidifying	Chapters 24, 25, 28
i. cooling cycle	Chapters 24, 28
j. mixed air process	Chapters 24, 25, 28
k. cooling and reheat	Chapters 24, 28
<b>IX.C. Heating Loads</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Interpret structure design data.	Chapters 28, 32, 40
2. Interpret building prints—size of rooms, etc.	Chapters 28, 32, 40
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Determine total resistance to heat flow (“R”) (“U”)	Chapters 32, 40, 51, 52
2. Calculate conduction loss:	
a. walls	Chapter 40
b. roofs	Chapter 40
c. floors	Chapter 40

**Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide:  
IX. Load Calculations—page 4**

<b>IX.C. Heating Loads (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
d. windows	Chapter 40
e. basement (walls, floor)	Chapter 40
f. unconditioned space	Chapter 40
3. Calculate infiltration:	
a. doors	Chapter 40
b. windows	Chapter 40
4. Calculate ventilation load.	Chapters 30, 40
5. Calculate duct loss.	Chapters 28, 29, 30, 32, 40
6. Calculate effects of bath and kitchen exhaust.	Chapters 28, 29, 30, 32, 40
7. Calculate effects of power roof ventilators.	Chapters 28, 29, 30, 32, 40
8. Calculate total heating load.	Chapters 28, 29, 30, 32, 40
<b>IX.D. Cooling Loads</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Interpret structure design data.	Chapter 40
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Calculate “U” values for building material.	Chapters 40, 42
2. Calculate cooling load temperature difference (CLTD).	Chapters 32, 40, 42
3. Make corrections for CLTD.	Chapters 32, 40, 42
4. Calculate conduction loads:	
a. walls	Chapters 32, 40, 42
b. roofs	Chapters 32, 40, 42
c. windows	Chapters 32, 40, 42
d. doors	Chapters 32, 40, 42
e. unconditioned space	Chapters 32, 40, 42
f. floors	Chapters 32, 40, 42
5. Calculate lighting load.	Chapters 32, 40, 42
6. Calculate equipment load.	Chapters 32, 40, 42
7. Calculate infiltration and ventilation load.	
a. heat load	Chapters 28, 29, 30, 32, 40
b. moisture loads	Chapters 24, 28, 29, 30, 32, 40
8. Calculate duct gain.	Chapter 30

**Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide:  
IX. Load Calculations—page 5**

<b>IX.D. Cooling Loads (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
9. Calculate refrigeration sensible heat ratio.	Chapters 32, 40, 51
10. Calculate storage factor.	Chapters 32, 40, 51
11. Calculate effects of bath and kitchen exhaust.	Chapters 28, 29, 30, 32, 40, 51
12. Calculate effects of power roof ventilators.	Chapters 28, 29, 30, 32, 40, 51
13. Calculate total cooling load:	
a. sensible loads	Chapters 28, 29, 30, 32, 40, 51
b. latent loads	Chapters 28, 29, 30, 32, 40, 51