



## ***Modern Refrigeration and Air Conditioning*** 20th Edition to 21st Edition Crosswalk

This document is intended to help you transition from the use of the 20th edition of *Modern Refrigeration and Air Conditioning* to the use of the 21st edition.

### **What's New in the 21st Edition?**

- **Follow-the-Heat™ Animations.** This collection of 63 short animations introduces learners to foundational concepts such as the scientific principles at work in the refrigeration cycle; the compression refrigeration cycle and its primary components; and electrical theory and basic applications. The *Follow-the-Heat™ Animations* engage learners using visual and auditory delivery, and the short-format animation allows for easy repeated viewing to deepen the understanding of concepts.
- **Troubleshooting Activities.** These digital activities, presented in the framework of a technician performing a service call, put the learner “in the technician’s shoes.” Throughout an activity, the learner is presented with choices and questions regarding the logical next steps and the proper use of test equipment. The structure of the activity reinforces the general troubleshooting methodology presented throughout the book.
- **Textbook content and pedagogy updates.** This new edition includes many textbook updates, including the following:
  - **New Chapter 17: Electrical Troubleshooting.** This new chapter includes existing electrical test instrument content and new content on electrical troubleshooting strategies and methods.
  - **Updated and expanded coverage.** Several topic areas were expanded or updated, including general troubleshooting methodology, electrical fundamentals, residential air-conditioning troubleshooting, mini-split and VRF systems, building automation systems, energy auditing, and energy management.
  - **Soft Skills for HVACR features.** Added throughout the book, each of these short features introduces a workplace skill, explains why the skill is important, and ends with questions that help learners absorb the knowledge and establish real-world connections.
  - **Service Call Troubleshooting features.** Located in select chapters, these features introduce a scenario in which a technician is performing a service call. The beginning of the troubleshooting process is described, and then learners are presented with an opportunity to speculate about possible testing, causes, and repairs.
  - **Integrated Learning Solution improvements.** All learning objectives were reviewed and aligned with textbook content and end-of-chapter review questions. Sections of Critical Thinking questions, which require learners to apply higher-level thinking skills, were added to each chapter.
  - **Reduction of domestic refrigerator-freezer coverage.** Coverage of domestic refrigerator-freezer appliances was reduced, with Chapter 23 and Chapter 24 from the 20th edition being combined into a new single chapter.

- **New Lab Activities.** 35 new lab activities—including lab activities focusing on basic electrical skills and sheet metal construction—have been added to the Lab Manual.
- **EduHub.** This easy-to-use learning hub delivers the foundation and tools that improve student retention and facilitate instructor efficiency. For the student, EduHub provides an eBook with text-to-speech capabilities, highlighting, and bookmarking; activities including new *Troubleshooting Activities*, new *Follow-the-Heat™ Animations*, videos, and animations; and digital versions of the Workbook questions and Lab Manual activities.
- **New Detailed Lesson Plans.** New detailed lesson plans break down instruction for each major section of a chapter, indicating learning objectives, terminology, instructor notes and preparation suggestions, and supporting activities to make planning easier and more effective for instructors. Instructor resources also include an Image Library, presentations for PowerPoint®, and assessment question banks.

## Crosswalk

The following chart provides a basic content correlation between the 20th and 21st editions. The first column lists the chapter from the 20th edition (©2017) and the second column lists the chapter in the 21st edition (©2021) where the content is now located.

20th Edition Chapter	21st Edition Chapter(s)
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# ***Modern Refrigeration and Air Conditioning***

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- 3 Service Calls

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**Section 3—Service Basics**

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- 8 Working with Tubing and Piping

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- 10 Equipment and Instruments for Refrigerant Handling and Service
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