Thermal Science Learning System

T7081

THERMAL

Thermal Science Learning System

Student Reference Guide

Optional Interactive Multimedia

Learning Topics:

- Temperature Measurement
- Pressure Measurement
- Thermal Expansion and Energy
- Heat Transfer
- Enthalpy and Phase Change
- Thermodynamic Laws
- Gas Laws and Phase Equilibrium
- Refrigeration Thermodynamics
- Vapor-Compression Refrigeration
- Refrigeration/Heat Pump Operation
- Vapor-Compression
- Heat Pump Systems

Amatrol's Thermal Science Learning System (T7081) provides learners with the knowledge and equipment needed to comprehend the principles of modern thermal systems, such as HVAC, geothermal, refrigeration, and steam systems. As learners progress through the curriculum, they will perform experiments demonstrating principles such as the ideal gas law, linear and volumetric thermal expansion, basic temperature measurement, latent and sensible heat, specific heat capacity, conduction, convention, radiation, evaporative cooling, and basic refrigeration.

This tabletop learning system showcases a full range of components, such as a fire syringe, a vacuum hand pump, bi-metallic ball and ring, and many more on a vertical panel for easy access and inventory. These components are used in various combinations to conduct experiments that show learners physical examples of thermal concepts and build foundational knowledge that they can use in real-world applications!

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Technical Data

Complete technical specifications available upon request.

Beaker (250 mL [5], 100 mL)
Bi-Metallic Strip, Ball, and Ring with Handles
Hotplate
Specific Heat Specimens
Nitrile Block Gloves (Small, Large)
Fire Syringe
Vacuum Hand Pump
Conductive Heat Transfer Kit
Convection Demonstration Kit
Single Flint Lighter
Flask Tongs
Desk Fan
Light, 500W Quartz
Student Curriculum (B11604)
Teacher's Guide (C11604)
Installation Guide (D11604)
Optional Multimedia (M11604)
Student Reference Guide (H11604)
Computer Requirements:
Please visit: http://www.amatrol.com/support/computer-requirements/
Additional Requirements:
Amatrol Workstation or Equivalent: Models 82-609, 82-610, or 82-611
Propane Gas Torch (Outside US)
Electrical (120 VAC)
Light, All-Purpose Machine Oil
Water from Tap Source
Matches
Ice Cubes

Hands-On Skills to Reinforce Theoretical Knowledge

The best way to engage learners and reinforce theoretical concepts is to apply the concept using hands-on skills. For example, using a vacuum pump supplied with the T7081, learners lower the pressure on a container of warm water until it boils, which demonstrates the relationship between pressure and a fluid's boiling point. As learners study thermal expansion, a key concept in bimetallic thermostats, they will apply heat to a bimetallic strip and observe how different metals expand at different rates. These and many other experiments engage the learner and build a solid foundation for further study in the field of thermal systems.

World-Class Thermal Science Curriculum

Learning Activity Packets (LAPs) Included

Amatrol, working closely with industry professionals and educators, produced this world-class thermal science curriculum with stunning breadth and depth to give learners a comprehensive education in thermal concepts. Specific topic areas in this course include thermal energy and heat transfer, thermodynamic laws and properties, refrigeration thermodynamics, and refrigeration pump operation.

As an option, Amatrol offers a highly-interactive multimedia version of this curriculum that combines a mix of text, audio, and 3D graphics and can be taken individually or delivered using a traditional classroom format. As an example of the multimedia interactions, learners study how a hermetic compressor's components are arranged within the compressor and then they can click on each part to gain an in-depth understanding of that component's role in the compressor's function.

Optional Multimedia

Amatrol's T7082: Air Conditioning / Heat Pump Learning System

Build Real-World Thermal Skills!

The Thermal Science Learning System is a fantastic lead-in to Amatrol's Air Conditioning / Heat Pump Learning System (T7082), which covers refrigeration, compressors, phase change, evaporators, and much more! The T7082 is also available with FaultPro, the industry's only electronic fault insertion software.

Student Reference Guide

A sample copy of the Thermal Science Learning System's Student Reference Guide is also included with the system for your evaluation. Student Reference Guides supplement this course by providing a condensed, inexpensive reference tool that learners will find invaluable once they finish their training making it the perfect course takeaway.

Additional Student Reference Guides may be purchased for your program by contacting your local Amatrol Representative.

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