

MTRK 167: MEDIUM AND HEAVY TRUCK HVAC SERVICE, DIAGNOSIS & REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2022
Credits:	3
Total Contact Hours:	96
Lecture Hours :	45
Lab Hours:	51
Hours Arranged:	0
Outside of Class Hours:	90
Prerequisite:	MTRK 156A or AUTO 156 or by department consent based upon individual's experience and ASE certifications or manufacturer certifications.
Strongly Recommended:	MATH 144.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

Intended for those seeking a career in the medium and heavy duty truck service and repair industry, this course is one component of the MTRK program. This class covers essential heating, ventilation and air conditioning system theory, along with inspection, diagnosis, service and repair of specific HVAC subsystems including: refrigeration, air distribution and automatic temperature control. Course prepares students for ASE Heating and Air Conditioning (T7) certification. 45 lecture hours, 51 lab hours.

Course Objectives

- complete ninety-five percent (95%) of Priority 1 (P-1), seventy percent (70%) of Priority 2 (P-2) twenty-five percent (25%) of the Priority 3 (P-3) required National Automotive Technician Education Foundation (NATEF) objectives form HVAC (T7). Please see attached NATEF objectives (pages 30-31) or www.natef.org for the most current objectives.
- perform refrigeration system evacuation and recharge procedures for maintenance and repair purposes.
- perform HVAC troubleshooting using diagnostic equipment such as pressure gauges, thermometers and scan tools.
- demonstrate safe practices while handling refrigerant and any associated equipment.
- remove and replace HVAC components such as compressors, condensers, firewall mounted evaporators.
- inspect HVAC system controls including mode and blend controls and temperature controls.

Major Course Content

- HVAC theory
 - Body comfort
 - Heat, matter and pressure
 - Refrigerant
 - Refrigeration systems
- Service equipment & procedures
 - Moisture & moisture removal
 - Refrigerant recovery & recycling
 - System pressure check
- Air distribution control
 - Air inlet control
 - Air outlet control
 - Air speed control
 - Air mix control
- Compressors
- Metering devices
- Automatic temperature control
 - Input sensors
 - Output actuators
 - Control systems
 - Self diagnostics
 - Multi-zone air distribution/temperature control
- Trailer refrigeration unit overview
 - Trailer climate zones
 - Refrigeration unit operation
- Auxiliary Power Unit overview
 - Sleeper cab a/c units
 - APU unit maintenance and repair

Lab Content

- Diagnosis, service and repair
 - Moisture & moisture removal
 - Refrigerant recovery & recycling
 - System pressure measurement & analysis
- Air distribution control testing
 - Air inlet control testing
 - Air outlet control testing
 - Air speed control testing
 - Air mix control testing
- Compressor diagnosis, service and repair
- Metering device diagnosis, service and repair
- Automatic temperature control diagnosis, service and repair
 - Input sensor testing
 - Output actuator testing
 - Diagnostic trouble code retrieval
 - Multi-zone air distribution/temperature control functional testing

Suggested Reading Other Than Required Textbook

Electronic journals, printed material, on-line resources relating to truck and trailer A/C systems

Examples of Required Writing Assignments

Precis of current HVAC and refrigeration unit technological advances or practices.

Examples of Outside Assignments

Weekly ASE style chapter review homework and online pre and post quizzes.

Examples:

Describe how phase changes in the refrigerant occur in a TXV refrigeration system.

In your own words, describe what happens to the heat absorbed by the refrigerant from the evaporator.

Instruction Type(s)

Lecture, Lab, Online Education Lecture