



MASTER COURSE OUTLINE

A. DESL 2209 Commercial Vehicle HVAC Systems

B. COURSE DESCRIPTION:

This course covers the heating, ventilation, and air conditioning (HVAC) systems used in today's commercial vehicles. Topics include R12 systems, R134A systems, system diagnostics, refrigerant identification, Environmental Protection Agency (EPA) regulations, and HVAC Technician Certification. This course, along with other program courses, satisfies the task requirements set forth by the Automotive Service Excellence (ASE) Education Foundation accreditation. Prerequisite: DESL 1104.

(3 Cr – 1 lect, 2 lab)

C. *Core Theme: Critical Thinking and People and the Environment

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):

- ILO 1: critical thinking (*Core Theme Goal 2*)
- ILO 2: awareness of the larger global community (*Core Theme Goal 7 or 8*)
- ILO 3: ethical, engaged citizenship (*Core Theme Goal 9 or Goal 10*)
- ILO 4: communication and collaboration (*Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration*)

E. MAJOR CONTENT AREAS:

- Vehicle HVAC systems theory of operation
- HVAC systems maintenance, diagnostics, and service
- HVAC Environmental Protection Agency (EPA) regulations and technician certification
- Refrigerant handling

F. GOAL TYPE, OBJECTIVES, AND OUTCOMES:

<u>GOAL TYPE</u>	<u>OBJECTIVES</u>	<u>OUTCOMES</u>
	Students will be able to	The student will successfully
<u>*Critical Thinking</u>	gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.	1. describe, diagnose, and repair HVAC systems.
<u>*People and the Environment</u>	explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.	1. identify refrigerant effects on the ozone.

<u>CS</u>	demonstrate how a HVAC system works and how heat is displaced.	1. test theories related to HVAC systems.
<u>CS</u>	diagnose problems related to HVAC systems.	1. complete task sheets related to HVAC systems.
<u>CS</u>	recognize preventative maintenance and troubleshooting of the different HVAC systems.	1. demonstrate how to troubleshoot related HVAC problems. 2. perform preventative HVAC maintenance procedures.
<u>CS</u>	replace HVAC system components.	1. perform shop tasks using service manuals related to HVAC systems.

G. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a disability and need accommodations should contact Accessibility Services at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

H. COURSE CODING INFORMATION:

Course Code S/Class Maximum 25; Letter Grade

Revision date: 01/10/20; 03/03/26

AASC Approval date: 04/19/11; 03/24/20; 03/17/26

*These five MnTC Goals have been identified as Riverland Community College Core Themes. Every course in the Riverland Community College curriculum shall meet outcomes from one of these themes.

**These five MnTC Goals have been identified as Riverland Community College Disciplines. Riverland's MnTC courses also shall meet outcomes from a Discipline Area.

NOTE: The Minnesota Transfer Curriculum "10 Goal Areas of Emphasis" are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.

*Riverland Community College Core Themes	MnTC Goal Number
Critical Thinking (CT)	2
Human Diversity (HD)	7A, 7B, 7A/B
Global Perspective (GP)	8
Ethical and Civic Responsibility (EC)	9
People and the Environment (PE)	10

**Riverland Community College Discipline Areas	MnTC Goal Number
Communication (CM)	1
Natural Sciences (NS)	3
Mathematics/Logical Reasoning (MA)	4
History and the Social & Behavioral Sciences (SS)	5
Humanities and Fine Arts (HU)	6

Riverland