



## MASTER COURSE OUTLINE

A. DESL 2225 Commercial Vehicle Power Trains II

B. COURSE DESCRIPTION:

This course covers identification, preventative maintenance (PM), troubleshooting, and major overhaul of live front and rear drive axles assemblies. This course, along with other program courses, satisfies the task requirements set forth by the Automotive Service Excellence (ASE) Education Foundation accreditation.

**(2 Cr – 1 lect, 1 lab)**

C. \*Core Theme: Critical Thinking

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:

- Identify Axle Types and Operation
  - Dead axles
  - Live axles
  - Pusher axles
  - Tag axles
- Axles
  - Lubrication service
  - Fluid types
  - Troubleshooting differential carrier problems
  - Axle alignment
- Differential Carrier Overhaul
  - Disassemble carrier
  - Pinion adjustments
  - Ring gear assembly and adjustments
  - Power divider disassemble/reassemble
- Failure Analysis
  - Gear failure
  - Axle failure

- Lubrication failure
- Operation misuse

F. GOAL TYPE, OBJECTIVES, AND OUTCOMES:

<u>GOAL TYPE</u>	<u>OBJECTIVES</u> Students will be able to	<u>OUTCOMES</u> The student will successfully
<u>*Critical Thinking</u>	recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.	1. evaluate the problem with parts or operation of the differential carrier assembly to share with the customer.
<u>CS</u>	understand the operation of the forward and rear differential.	1. demonstrate the operations of forward and rear differentials.
<u>CS</u>	understand the overhaul process of differentials.	1. perform tear down and reassembly of differentials per service manuals.
<u>CS</u>	understand the inspection of failed parts.	1. inspect parts and determine reusability per failure books.

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.

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

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

Riverland