



MASTER COURSE OUTLINE

A. DESL 1106 Introduction to Powertrains

B. COURSE DESCRIPTION:

This course covers the theory of operation, maintenance, troubleshooting, adjustment and repair of six common mechanical clutches found in diesel powered equipment, repairs, adjustments and maintenance of commercial vehicle drivelines. This course, along with other program courses, satisfies the task requirements set forth by the Automotive Service Excellence (ASE) Education Foundation accreditation.

(3 Cr – 1 lect, 2 lab)

C. Core Theme: Critical Thinking

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES

This course addressed 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:

- Transmission removal and installation
- Clutch theory of operation, maintenance, and repair
- Pull to release, push to release, clutch identification
- Clutch adjustment
- Inspection of drivelines
- Measure driveline angles
- Diagnosis chassis vibrations
- Driveline retarders
- Drivetrain: driveshaft and universal joints

F. GOAL TYPE, OBJECTIVES, AND OUTCOMES:

<u>GOAL TYPE</u>	<u>OBJECTIVES</u>	<u>OUTCOMES</u>
<u>**Critical Thinking</u>	Students will be able to 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. perform service, adjustment, replacement, and maintenance of drivelines vehicle (CV) clutches.
<u>CS</u>	recognize diagnostic and repair tasks on the actual equipment.	1. maintain, diagnose, and repair of drivelines.

<u>CS</u>	maintain and adjust push to release and pull to release model clutches, as well as single disc, double disc, and self- adjusting clutches.	1. complete a series of maintenance and adjustment tasks related to various types of clutches.
<u>CS</u>	follow procedure for removal and replacement of common clutch assemblies.	1. remove and install both a transmission and complete clutch assembly within a training vehicle.
<u>CS</u>	evaluate vehicle clutch and driveline performance.	1. test drive a live training vehicle and complete a 10-point checklist during the test.

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 the instructor or the Student Success Center 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 24; Letter Grade

Revision date: 03/31/22

AASC Approval date: 05/03/22

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

*These five MnTC Goals have been identified as Riverland Community College Disciplines.

** These five MnTC Goals have been identified as Riverland Community College Core Themes.

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.