



MASTER COURSE OUTLINE

A. DESL 1104 Introduction to Electrical Systems

B. COURSE DESCRIPTION:

This course covers electrical theory, circuit analysis, use of special tools and equipment, and basic electrical circuit troubleshooting. It also covers circuit wire diagrams and construction of circuits, diagnostics, and repair of the charging systems. Electric starting system and other electrical systems on commercial vehicles are covered. This course, along with other program courses, satisfies the task requirements set forth by the Automotive Service Excellence (ASE) Education Foundation accreditation.

(2 Cr – 2 lect, 0 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:

- Fundamentals of Electricity
 - Atomic structure and electron movement
 - Electrical circuits
 - Electrical characteristics of voltage, current, resistance
 - Electric motor and generator principles
- Electrical Theory and Laws
 - Ohm's Law
 - Kirchhoff's First Law
 - Kirchhoff's Second Law
 - Conventional and electron theory
- Outline Electrical Properties
 - Conductors
 - Insulators
 - Semi-conductors

- Fundamentals of Electronics and Computers
 - Data retention
 - Electronic Signals usage
 - Semi-conductors usage and testing
 - Integrated circuits

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>	analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.	1. perform tasks using different electrical laws.
<u>CS</u>	understand electrical theory.	1. demonstrate an understanding of electrical theory.
<u>CS</u>	interpret wiring diagrams.	1. demonstrate the utilization of service manuals for wiring diagram tasks.
<u>CS</u>	explain laws related to vehicle lighting.	1. demonstrate the use of the Minnesota Department of Transportation (DOT) requirements for lighting.
<u>CS</u>	promote electrical equipment safely.	1. demonstrate the safe use and testing of equipment.
<u>CS</u>	interpret Ohm's Law.	1. test circuit using Ohm's Law.

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.

The student will need access to and use of a laptop computer capable of running required software.

H. COURSE CODING INFORMATION:

Course Code S/Class Maximum 24; Letter Grade

Revision date: 01/10/20; 10/24/23

AASC Approval date: 04/19/11; 3/24/20; 12/11/23

*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.