



## MASTER COURSE OUTLINE

A. DESL 2223 Engines IV

B. COURSE DESCRIPTION:

This course covers operation and diagnostics of engine air filtration, cylinder heads, exhaust systems, engine exhaust gas recirculation (EGR), turbo charger design and operation on today's diesel engine. 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:

- Air filtration system diagnostics and repair
- Exhaust systems including EGR used in agricultural equipment and trucks today
- Turbocharger operation, troubleshooting and repair
- Cylinder head diagnostics and repair
- Proper Original Equipment Manufacturer (OEM) repair procedures and guidelines will be observed

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. describe diagnostic procedures of intake and exhaust systems. |
| <u>CS</u>                  | maintain air intake and exhaust systems.  | 1. perform maintenance to diesel engines air intake and exhaust  |

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|-----------|---|--|
|           |   | systems as described in OEM service literature.  |
| <u>CS</u> | diagnose common performance problems on turbocharged systems. | 1. use OEM service literature to track down problems in agricultural equipment and medium/heavy duty trucks. |
| <u>CS</u> | describe repair procedures.                                   | 1. perform repair procedures as described in OEM service literature.   |

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; 02/03/23

AASC Approval date: 04/19/11; 03/24/20; 03/28/23

| <b>*Riverland Community College Disciplines</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>                |

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

\*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.

Riverland