



## MASTER COURSE OUTLINE

A. AUTO 1311 Engine Theory and Repair

B. COURSE DESCRIPTION:

This course covers complete engine disassembly and reassembly, parts identification, wear locations and measurements. Proper procedure for rebuilding cylinder heads, cylinder block assemblies, and the theory of operation of internal combustion engines are included. This course, along with other program courses, satisfies the task requirements set forth in Section I of the ASEEF (Automotive Service Excellence Education Foundation).

**(3 Cr – 1 lect, 2 lab)**

C. Core Theme: Critical Thinking

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses 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:

- Engine operation
- Cooling systems
- Lubrication systems
- Fuel control systems, intakes, and exhaust
- Cylinder heads, valves, and springs
- Camshafts and valve train components
- Engine blocks, pistons, crankshafts, and bearings

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>	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.	<ol style="list-style-type: none"> <li>1. completely disassemble an engine.</li> <li>2. identify, list, and inspect all parts of the cooling and lubrication system.</li> <li>3. identify any machining needed.</li> <li>4. properly reassemble an engine.</li> <li>5. perform cylinder head repair.</li> </ol>

<b>**Critical Thinking</b>	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.	<ol style="list-style-type: none"> <li>inspect parts and use information to decide on a course of action.</li> <li>identify connections between analyzed conditions and the necessary corrective action.</li> </ol>
<u>CS</u>	identify ways to exercise the rights and responsibilities of citizenship.	<ol style="list-style-type: none"> <li>analyze the ramifications of performing a given repair to a substandard level.</li> </ol>
<u>CS</u>	learn to use the tools and procedures needed to remove, disassemble, inspect, and overhaul an automotive engine.	<ol style="list-style-type: none"> <li>disassemble an engine completely.</li> <li>identify, list, and inspect all parts of the cooling and lubrication system.</li> <li>identify any machining needed.</li> <li>reassemble the engine properly.</li> <li>perform cylinder head repair.</li> </ol>
<u>CS</u>	perform minor engine repair procedures.	<ol style="list-style-type: none"> <li>replace timing belts.</li> <li>repair valve seals.</li> <li>repair oil and coolant leaks.</li> </ol>

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: 03/09/11; 11/29/17; 10/23/23

AASC Approval date: 12/12/17; 12/11/23

<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