



MASTER COURSE OUTLINE

A. IMMR 1720 Low Pressure Boiler

B. COURSE DESCRIPTION:

This course covers boiler functions, operations, safety, controls, hot water systems, steam systems, and the identification of boiler fittings. This course is designed to help the student prepare for a special engineer's license exam. Students receive actual hands-on boiler operation experience, including boiler water testing.
(4 Cr – 3 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:

- Sight inspection before operating
- Operate boiler and perform safety checks
- Record/maintain boiler log
- Test low water fuel cut out
- Calculate boiler horsepower
- Calculate gallons per minute of pump delivery
- Take boiler offline
- Prepare boiler for annual inspection

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. operate boiler operation with the use of boilers software. 2. demonstrate the ability to set up a control loop to achieve process variables, set points and outputs to include boiler master controls,

		airflow, fuel flow, drum level, and oxygen percentage.
<u>CS</u>	prepare for the state boiler exam.	1. pass state boiler test to get a special engineer's license.
<u>CS</u>	demonstrate proper boiler operation.	1. operate boiler doing all safety checks using boiler log.
<u>CS</u>	prepare boiler for annual inspection.	1. prepare boiler for an inspection; inspecting the boiler and the boiler passing inspection, and if handling boiler operations on the job.
<u>CS</u>	perform water treatment tests.	1. obtain consistent results when performing water treatments, including alkalinity test, conductivity test, and sulfite 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 Accessability 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 24; Letter Grade

Revision date: 01/14/11; 04/03/18; 04/02/24

AASC Approval date: 04/17/18; 04/16/24

*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.

*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

**Riverland Community College Discipline Areas	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