MASTER COURSE OUTLINE

A. ARET 1180 Industrial Electricity and Electronics II

B. COURSE DESCRIPTION:

In the field of Mechatronics, a basic knowledge of industrial electricity is needed to understand the operation of all types of commercial and industrial equipment and to gain further knowledge of more complex packaging machines and systems. This course will expand on the principles taught in previous courses and provide the student hands-on activities utilizing proper safety procedures while working with electrical tools, measurement equipment, electrical circuits, motors, and electrical components. Prerequisite: ARET 1175. **(3 Cr – 2 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:

- Electrical measurements
- Electrical tools
- Electrical testing equipment
- Power and circuit protection in electrical systems
- 3-Phase electrical systems
- Electrical wiring circuits
- Electrical system troubleshooting
- Electrical motors
- Electrical safety procedures
- Electrical components

F. GOAL TYPE, OBJECTIVES, AND OUTCOMES:

GOAL TYPE	OBJECTIVES Students will be able to	OUTCOMES The student will successfully
*Critical Thinking	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. apply effective electrical system troubleshooting. 2. critique electrical safety procedures.
CS	define electrical systems.	1. analyze power and circuit protection in electrical systems.
CS	categorize electrical components.	1. describe 3-phase electrical systems. 2. demonstrate understanding of electrical wiring circuits.
CS	recognize proper electrical measurements.	1. articulate proper measurement processes. 2. utilize electrical testing equipment.

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.

H. COURSE CODING INFORMATION:

Course Code S/Class Maximum 24; Letter Grade

Revision date: 04/02/26
AASC Approval date: 02/15/22; 05/12/26

*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)	**7A, 7B, 7A/B**
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**