MASTER COURSE OUTLINE

A. ARET 1170 Troubleshooting Mechatronic Systems

B. COURSE DESCRIPTION:
This course is designed for manufacturing personnel preparing to enter the fields of Mechatronics and Packaging. Students will utilize schematics, test instruments, and proper safety procedures in the troubleshooting process. A variety of mechatronic systems, including electrical, mechanical, fluid power, and Programmable Logic Controllers (PLCs), will be examined.
(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:

- Troubleshooting techniques
- Schematics to troubleshoot mechatronic systems
- Schematics to troubleshoot electrical systems
- Mechatronics and packaging equipment
- Motion control systems
- Electrical control panels using schematics
- Testing equipment in the troubleshooting process
- Various types of motors
- Motors and motor circuits
- Safety procedures

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,	1. critique motion control systems. 2. critique various types of motors.

	clear, comprehensive, and conscious of possible bias in the information selected.	
CS	recognize trouble shooting techniques.	1. analyze schematics to trouble shoot mechatronic systems. 2. analyze schematics to troubleshoot electrical systems.
CS	define testing equipment techniques.	1. identify proper safety procedures with troubleshooting equipment. 2. apply proper safety procedures in the troubleshooting process.
CS	critique a variety of mechatronics and packaging equipment.	1. articulate understanding of equipment operation.

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:
AASC Approval date: 02/15/22

***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.