



MASTER COURSE OUTLINE

A. ARET 1126 Mechanical Power Transmission

B. COURSE DESCRIPTION:

This course is an introduction to Mechatronic Systems. The focus of this course is the application of mechanical power transmission to modern manufacturing equipment, used by machine assemblers, maintenance mechanics, field service personnel, engineers, manufacturing technicians and technical salespeople. Mechanical systems covered include chains, belts, couplings, gear reducers, shaft alignment, gear trains, linkages, bearings, and machine timing. Instruction uses hands-on projects in addition to demonstration and lecture on actual packaging machines. This course is part of a 2-course sequence that leads to students being eligible to take Packaging Machinery Manufacturers Institute's (PMMI) Mechanical Components 1 test. This test is one of eight Mechatronics certifications offered by PMMI.

(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:

- Rotary mechanical power transmission
- Describe mechanical fasteners and their applications
- Differentiate bearing types and applications
- Differentiate belt drive systems and applications
- Gear/belt/pulley/sprocket ratios
- Chain drive systems
- Gear types and applications
- Hand and power tools

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"> 1. explain the use, purpose and various causes of bearing failure. 2. critique several examples of belt, chain and gear drives.
<u>CS</u>	define the function of a power transmission system.	<ol style="list-style-type: none"> 1. analyze mechanical power transmission and applications.
<u>CS</u>	recognize the operation and function of differential gears.	<ol style="list-style-type: none"> 1. identify gear type and applications.
<u>CS</u>	recognize when to utilize belts and pulleys in lieu of gears.	<ol style="list-style-type: none"> 1. identify gear/belt/pulley/sprocket ratios.

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.

Riverland