



MASTER COURSE OUTLINE

A. ARET 1140 Computer Integrated Manufacturing

B. COURSE DESCRIPTION:

The purpose of this course is to introduce students in all manufacturing fields to the manufacturing process. Students will examine the principles of manufacturing, manufacturing processes, the elements of automation, and the integration of manufacturing elements. These principles will be applied to manufacturing situations through the use of simulations, assembly of manufacturing systems, and through the use of robotics and Computer Integrated Manufacturing (CIM) equipment.

(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:

- History of manufacturing
- Control systems
- Manufacturing cost management
- Product design for manufacturability
- Analyze production
- Manufacturing processes
- Understanding automation
- Elements of power
- Robotic programming and manufacturing environment
- Manufacturing elements into a manufacturing cell
- Manufacturing system design

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"> critique manufacturing processes. design a product for manufacturability.
<u>CS</u>	define different manufacturing processes.	<ol style="list-style-type: none"> analyze design considerations for manufacturing. design a product for manufacturability.
<u>CS</u>	recognize elements of automation.	<ol style="list-style-type: none"> articulate robotic simulation and physical testing. formulate an understanding of automation.
<u>CS</u>	recognize integration of manufacturing elements.	<ol style="list-style-type: none"> identify computer integrated manufacturing system types. identify the costs of manufacturing.

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