ILLINOIS VALLEY
COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development (WFD)

COURSE: RMA 1200 Automation I

Effective Date: Spring   2025   **Submitted Date:** Aug-24

Credit Hours: 2   **IAI Number (if applicable):** N/A

Complete all that apply or mark "None" where appropriate:

Prerequisite(s): None.

Enrollment by assessment or other measure? ☐Yes   ☒No

If yes, please describe:

Corequisite(s): None.

Pre- or Corequisite(s): None.

Consent of Instructor: ☐Yes   ☒No

Delivery Method: ☒**Lecture**   1 **Contact Hours** (1 contact = 1 credit hour)

☐**Seminar**   0 **Contact Hours** (1 contact = 1 credit hour)

☒**Lab**   2 **Contact Hours** (2-3 contact = 1 credit hour)

☐**Clinical**   0 **Contact Hours** (3 contact = 1 credit hour)

☐**Practicum**   0 **Contact Hours** (2-4 contact = 1 credit hour)

☐**Internship**   0 **Contact Hours** (5-10 contact = 1 credit hour)

Offered: ☒**Fall**   ☐**Spring**   ☐**Summer**

CATALOG DESCRIPTION:

This will be the first of two classes that will outline the processes involved in Industrial Automation. The classes are designed to prepare students for the modern manufacturing environment. This program will prepare students for employment with companies that have implemented team-oriented design, production, quality, and maintenance systems within the manufacturing environment. American manufacturers are increasingly using high-tech equipment that involves multiple integrated systems. It is critical that these companies be able to recruit and employ individuals who know how to operate, troubleshoot, and maintain this high-tech equipment.

ACCREDITATION STATEMENTS AND COURSE NOTES:
None.

COURSE TOPICS AND CONTENT REQUIREMENTS:
I.   Occupations and Trades
II. Automation and Manufacturing
III. Digital Data Transfer and Programming Concepts
IV. Components and Hardware
V.   Machine Systems
VI. Process Systems and Automated Machinery

INSTRUCTIONAL METHODS:
- Lecture
- Lecture/ Discussion
- Demonstration

EVALUATION OF STUDENT ACHIEVEMENT:
- Tests
- Quizzes
- Labs
- Projects

INSTRUCTIONAL MATERIALS:
Textbooks
Industrial Automation: Hands-On, 1st Edition; ISBN 9780071816458
Resources
Festo (LMS) (Lab trainer)
Amatrol (LMS) (Lab trainer)

LEARNING OUTCOMES AND GOALS:
Institutional Learning Outcomes
☐1) Communication – to communicate effectively.

☒2) Inquiry – to apply critical, logical, creative, aesthetic, or quantitative
    analytical reasoning to formulate a judgement or conclusion.

☐3) Social Consciousness – to understand what it means to be a socially
    conscious person, locally and globally.

☐4) Responsibility – to recognize how personal choices affect self and society.

Course Outcomes and Competencies
Upon the completion of this course, the student will be able to:

1. Be familiar with the types of careers in manufacturing
   1.1. Recognizes and describes different career roles in manufacturing, such as production operators, quality control inspectors, maintenance technicians, and supply chain managers
   1.2. Role requirements. Demonstrates knowledge of the skills, qualifications, and certifications needed for various manufacturing careers
   1.3. Industry Trends. Stay informed about emerging trends and technologies that impact career opportunities in manufacturing

2. Recognize and maintain a safe manufacturing workplace
   2.1. Explain the safety measures required with automated systems
   2.2. Correctly design safety circuits
   2.3. Correctly design safety measures for a Robotic system

3. Learn the principles of factory automation
   3.1. List the advantages and disadvantages of automation
   3.2. Describe automation concepts
   3.3. Define the operations of these concepts
   3.4. List the components and hardware for automated systems

4. Identify the major components of the production process
   4.1. Explain the use of the components and hardware for automated systems
   4.2. Identify the machine systems that operate inside the automation system
   4.3. List the process systems and automated machinery
   4.4. Learn basic knowledge in electronic control systems, programmable logic controllers, infrared emitters and detectors, laser systems, and automated robotic systems