ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development (WFD)

COURSE: RMA 2200 Automation II

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

Credit Hours: 1.5 **IAI Number (if applicable): N/A**

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

Prerequisite(s): RMA 1200

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**	**0.5 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 is the second of a two-course series outlining the processes involved in Industrial Automation. The classes are designed to prepare students for the modern manufacturing environment and the design of automated and advanced manufacturing production processes. Topics include numerical control, group technology, just-in-time, automated inspection, and flexible manufacturing systems. This program will prepare students for employment with companies implementing team-oriented design, production, quality, and maintenance systems within the manufacturing environment that are using high-tech equipment that involves multiple integrated systems more frequently.

ACCREDITATION STATEMENTS AND COURSE NOTES:
None.

COURSE TOPICS AND CONTENT REQUIREMENTS:

I. Industrial and Factory Business Systems
II. Machine System and Design
III. Applications
IV. Troubleshooting

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:

Identify the major components of the production process
- 1.1. Recognize and describe the different processes involved with automation
- 1.2. Define controllers and their operation
- 1.3. Define operator interfaces
- 1.4. Define sensors and actuators

2. Understand the machine systems operated through automation
   - 2.1. Outline proper conveyance sequence
   - 2.2. Demonstrate proper programming sequence for an automated conveyance system
   - 2.3. Design an automation system detailing requirements, design, fabrication, and installation.

3. Understand the software application
   - 3.1. Identify and discuss programming concepts
   - 3.2. Identify and discuss design software
   - 3.3. Define SCADA and Data Acquisition

4. Troubleshooting electronic control systems, programmable logic controllers, infrared emitters and detectors, laser, and automated robotic systems
   - 4.1. Utilize the tools and equipment used in maintenance troubleshooting
   - 4.2. Correctly troubleshoot from different types of drawings, process flow charts, and programming and programming codes
   - 4.3. Explain the purpose of preventive and predictive maintenance