**MOHAWK VALLEY COMMUNITY COLLEGE**

**UTICA AND ROME, NEW YORK**

**School of Science, Technology, Engineering, & Math (Transfer)**

**COURSE OUTLINE**

**CI 246 Critical Infrastructure Security C-2, P-2, Cr-3**

**Course Description:**

**Pre-Requisite**: CI 112 Networking Fundamentals and CI 132 UNIX OS & Security

This course provides students with an understanding of the basics of critical infrastructure and its relationship to cybersecurity. Topics include what critical infrastructures are, where they are likely to be found, and their vulnerabilities. Students explore historical trends and known breaches as well as current security challenges facing the industry.

**Student Learning Outcomes:**

At the conclusion of this course, the student will be able to:

1. Describe the use and application of PLCs in automation.
2. Describe the components and applications of industrial control systems.
3. Explain various control schemes and their differences.
4. Understand and compare the basics of the most used protocols.
5. Design and operate a virtualized industrial control system network.
6. Demonstrate the ability to understand, evaluate, and implement security functionality across an industrial network.
7. Analyze the effectiveness of foundational cybersecurity techniques on an industrial control system network.

**Major Topics/Schedule:**

Week 1 - Chapter 1: Introduction

Week 2 - Chapter 2: Industrial Network Overview

Week 3 - Chapter 3: Industrial Cybersecurity History and Trends

Week 4 - Chapter 4: Introduction to Industrial Control Systems and Operations

Week 5 - Chapter 5: Industrial Network Design and Architecture

Week 6 - Chapter 6: Industrial Network Protocols

Week 7 - Course Midterm

Week 8 - Chapter 7: Hacking Industrial Control Systems

Week 9 - Chapter 8: Risk and Vulnerability Assessments

Week 10 - Chapter 9: Establishing Zones and Conduits

Week 11 - Chapter 10: Implementing Security and Access Controls

Week 12 - Chapter 11: Exception, Anomaly, and Threat Detection

Week 13 - Chapter 12: Security Monitoring of Industrial Control Systems

Week 14 - Chapter 13: Standards and Regulations

Week 15 - Course Final