

MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

Course Outline

Course Title: Programmable Logic Controllers
Semester Course Prefix and Number: PAS 1251
Old Quarter Course Prefix and Number:

Submitted By: Scott Norcia
Approval Date:
Revision Date: 4/2/13

Number of Credits: 3
Semester(s) Offered: Spring
Class Size: 24
Negotiated by AASC on: (date)

Number of Lecture Credits: 1
Number of Lab Credits: 2
Number of Lab Hours: 4
Number of Studio/Demonstration/Internship Credits:

Course Purpose Code:

- 0 - Developmental Courses
1 - Non-transferable, General Education
X 2 - Technical course related to career programs
3 - College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
4 - Other college course not considered a part of general education (MNTC) (e.g. computer science, health, physical education)
5 - Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTC) requirements or intended for transfer.
9 - Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

This course is an introductory class covering the installation, operation, and programming of industrial programmable logic controllers (PLCs). Lecture reviews a variety of PLC types/manufacturers and the components of a PLC system. Labs provide hands-on activities demonstrating the practical use of PLCs in industrial control.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): EIAT/PAS 1253, EIAT/PAS 1243
Reading Prerequisite: None
Composition Prerequisite: None
Mathematics Prerequisite: None

Career Programs and Transfer Majors Accessing this Course:

Process Automation Systems Diploma
Process Automation Systems AAS
Wind Energy Technology AAS

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:

(Notes: No more than two goals may be met by any one course. Curriculum Committee review and the Chief Academic Officer's approval are required.)

- 0. X None
1. Communications
2. Critical Thinking
3. Natural Sciences
4. Mathematical/Logical Reasoning
5. History and the Social and Behavioral Sciences
6. The Humanities and Fine Arts
7. Human Diversity
8. Global Perspectives
9. Ethical and Civic Responsibility
10. People and the Environment

Learning Outcomes: (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Following the completion of this course the student will be able to demonstrate the ability to:

1. identify the major components of a PLC system and describe their functions.
2. describe advantages of using PLC's in industrial control
3. wire PLC inputs and outputs
4. describe the processors function, program scan, and types of memory.
5. describe three types of programming devices used with PLCs.
6. access PLC specifications from manufactures manuals.
7. identify the terms used in conjunction with memory storage.
8. interpret tables and maps to identify specific types of memory locations.
9. convert from one numbering system to another
10. identify types of electrical drawings and symbols related to PLCs.
11. describe relay ladder logic instructions used in PLCs.
12. identify the methods and interface equipment used to program PLCs
13. interface to and operate programming devices with PLCs
14. write, read, and store relay ladder logic programs to the PLC.
15. define common terms associated with programming PLCs
16. correct ladder logic to be agreeable with the design restrictions of the manufacturer.

Student Assessment Methods:

Lab assignments, worksheets, papers, and tests.

Use of Instructional Technology: (includes software, interactive video and other instructional technologies):

PLCs, Programming software, discrete devices, and instructional videos.

Additional Special Information: (special fees, directives on hazardous materials, etc.)

Laptop Computer Lease

Transfer Information: (Please list colleges/majors that accept this course in transfer.)

None

Affiliated Mesabi Range College Courses and Programs:

Process Automation Systems Diploma
Process Automation Systems AAS
Wind Energy Technology AAS

Approvals:

Body	Representative Signatures	Date
Faculty Association		
Academic Affairs Standards Committee		
Chief Academic Officer		

Distribution: Original – Instructional Services
Copies: Transfer Specialist, Originating Faculty Member, Records
Revised: December 2012