

# MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

## Course Outline

**Course Title:** Industrial Data Communications  
**Semester Course Prefix and Number:** PAS 2235  
**Old Quarter Course Prefix and Number:**

**Submitted By:** Scott Norcia  
**Approval Date:**  
**Revision Date:** 2/16/12

**Number of Credits:** 4  
**Semester(s) Offered:** Spring  
**Class Size:** 24  
Negotiated by AASC on: (date)

**Number of Lecture Credits:** 1  
**Number of Lab Credits:** 3  
**Number of Lab Hours:** 6  
**Number of Studio/Demonstration/Internship Credits:**

### Course Purpose Code:

- 0 – Developmental Courses  
 1 – Non-transferable, General Education  
 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 offering is designed to provide the student with a fundamental knowledge of industrial data transmission. Basic standards and protocols will be studied with an emphasis on Ethernet, DH+, Modbus, and Fieldbus. Lab safety and the safe and proper use of tools and test equipment is emphasized.

### Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): None  
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

### 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. <input checked="" type="checkbox"/> None                                | 6. <input type="checkbox"/> The Humanities and Fine Arts     |
| 1. <input type="checkbox"/> Communications                                 | 7. <input type="checkbox"/> Human Diversity                  |
| 2. <input type="checkbox"/> Critical Thinking                              | 8. <input type="checkbox"/> Global Perspectives              |
| 3. <input type="checkbox"/> Natural Sciences                               | 9. <input type="checkbox"/> Ethical and Civic Responsibility |
| 4. <input type="checkbox"/> Mathematical/Logical Reasoning                 | 10. <input type="checkbox"/> People and the Environment      |
| 5. <input type="checkbox"/> History and the Social and Behavioral Sciences |                                                              |

**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.) Differentiate between industrial network protocols.
- 2.) Comprehend industrial network terminology.
- 3.) Compare and contrast network communications and traditional hardwired systems.
- 4.) Comprehend LAN wiring.
- 5.) Utilize a lab based LAN
- 6.) Integrate a PLC based control system utilizing EtherNet/IP.
- 7.) Observe proper safety procedures.
- 8.) Work cooperatively.
- 9.) Apply critical thinking skills.

**Student Assessment Methods:**

Lab assignments, worksheets, papers, and tests.

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

Power Point Software, videos, software based lab simulators.

**Outline or Statement of Major Course Content:**

See "Learning Outcomes" above.

**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

**Approvals:**

<b>Body</b>	<b>Representative Signatures</b>	<b>Date</b>
<b>Curriculum Committee</b>		
<b>Faculty Association</b>		
<b>Academic Affairs Standards Committee</b>		
<b>Chief Academic Officer</b>		

**Distribution:** Original – Administrative Office

**Copies:** Curriculum Committee Chair, AASC Chair, Transfer Specialist, Originating Faculty Member, Scheduler, Records, Student Services, Learning Center, Library

**Revised:** October 2006