

# MESABI RANGE COLLEGE

## Course Outline

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

**Submitted By:** Scott Norcia  
**Approval Date:**  
**Revision Date:** 9/6/16

**Number of Credits:** 4      **Number of Lecture Credits:** 1  
**Semester(s) Offered:** Spr      **Number of Lab Credits:** 3      **Number of Lab Hours:** 6  
**Class Size:** 24      **Number of Studio/Demonstration/Internship Credits:**  
Negotiated by AASC on:  
(date)

### Course Purpose Code:

- 0 – Developmental Courses
- 1 – Non-transferable
- 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 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:

The course is a "Hybrid" or "Blended" course with the majority of the learning environment traditional in-class lectures and hands-on lab work which also includes Web-based learning activities to complement face-to-face work. 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 are 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:

Electrical Controls and Maintenance Diploma  
Electrical Controls and Maintenance 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. AASC 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)

Upon completion of this course, the student will be able 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.

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

Laptop Computer Lease and Required Tool List

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

None

**Affiliated Mesabi Range College Courses and Programs:**

**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