

**MESABI RANGE COMMUNITY & TECHNICAL COLLEGE – VIRGINIA/EVELETH  
COURSE OUTLINE**

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**Course Title:** Electrical Control of Machines  
**Quarter Course Prefix and Number:**  
**Semester Course Prefix and Number:** EIAT 2265

**Approval Date:**  
**Revision Date:**

**Number of Credits:** 2      **Number of Lecture Credits:** 1      **Number of Lab Credits:** 1  
**Semester(s) Offered:**      **Number of Studio/Discussion Credits:**

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**Course Purpose Code:**

- 0 – Developmental Courses
- 1 – Non-Transferable General Studies
- 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 Minnesota Transfer Curriculum (MNTC) requirements.
- 9 – Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

**Catalog Description:**

This course covers the discrete and integrated circuit elements used in modern control systems. The course includes the expanding use of solid-state and microprocessor control of systems, and the use of fluid and electrical-mechanical power. Topics covered will include machine control power courses, control system and machine environments, motion control of machines, and complex control situations.

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

Course Prerequisite(s): EIAT 1253, EIAT 1233, EIAT 1243, EIAT 1295, & EIAT 1244  
Reading Prerequisite:  
Composition Prerequisite:  
Mathematics Prerequisite:

**Career Programs and Transfer Majors Accessing this Course:**

Electrical & Industrial Automation Technology

**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 Vice President of Academic Affairs approval are required).

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| 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:**

The Student will:

1. compare hazardous areas
2. identify main sources of power and control
3. interpret Motor Control Center schedules
4. identify the lay-out of MCCs
5. identify the components of MCCs
6. perform maintenance on MCCs
7. wire and control machines from MCCs
8. define power factor
9. identify power factor correction
10. design complex control circuits
11. troubleshoot complex control circuits
12. develop documentation of control circuits
13. read flow charts
14. read timing or bar charts
15. identify machine environments
16. analyze complex control circuits
17. identify types of non-intrusive sensors used in the detection of machine position and the location of target objects.
18. properly wire, adjust/calibrate and interface sensors to control circuits

**Possible 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, motor and machine control lab facilities and equipment

**A one-paragraph summary or outline of the major course content:**

This course will provide typical machine control system explanations, illustrations, and application that typical of those found in industry. The lab application will be performed with actual industrial grade control systems. The focus will be on the design, wiring, and troubleshooting of systems.

**Additional special information (special fees, directives on hazardous materials, etc.)**

Lab Fee

**APPROVALS:**

Body	Representative Signatures	Date
Curriculum Committee		
Faculty Association		
Meet and Confer		
Vice President of Academic Affairs		

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