

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

Course Title: Automation Components & Equipment
Quarter Course Prefix and Number:
Semester Course Prefix and Number: EIAT 2264

Approval Date:
Revision Date: Sept 2010

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

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 devices and integrated circuit components used in modern automated control systems. Topics include the components and design of systems for power distribution and control interfacing. The course details the operation, configuration, and installation of devices and equipment used for position, motion and speed control of motor drives. Course lab assignments provide hands on experience in designing, wiring, and configuring system components into an integrated control system. Additional topics covered will include print reading, hazardous location wiring, and power quality analysis.

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. Identify the configuration of power distribution systems and components.
2. Interpret Motor Control Center (MCC) schedules and maintenance procedures.
3. Identify main sources of power and control.
4. Read and interpret electrical points and diagrams.
5. Design, develop, and document complex control circuits.
6. Identify types of non-intrusive sensors used in the detection of machine position and target object location.
7. Troubleshoot complex control circuits using flow charts and timing diagrams.
8. Properly wire, adjust/calibrate and troubleshoot variable speed drive systems.
9. Configure power, control and communication wiring of MCCs systems for hazardous locations.
10. Identify power factor correction.

Possible student assessment methods:

Assessment made of lab assignments, worksheets, and papers using rubrics and check lists. Tests and quizzes of technical knowledge given at regular intervals during semester.

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 applications 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		
AASC		
Senior Academic Officer		

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