

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

---

**Course Title:** Automation Lab  
**Quarter Course Prefix and Number:**  
**Semester Course Prefix and Number:** EIAT 2268

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

**Number of Credits:** 2      **Number of Lecture Credits:** 0      **Number of Lab Credits:** 2  
**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 builds the principles and knowledge acquired in previous EIAT course work and curriculum with an emphasis on actual application in the construction of an automated process or work cell. Students are asked to put forward a project idea and complete the tasks involved in designing, assembling, and installing electrical/mechanical components into a completely automated system. The projects require written descriptions and documentation including equipment lists, a “tagname” data base, control programs and electrical/mechanical prints. The design, assembly, and programming are required to simulate real world applications used in automated industrial manufacturing and process control. All projects are group assignments that require a teamwork approach.

**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).

- |  |  |
|--|--|
| 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 checked="" 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. Apply teamwork principle in the creation of an automated work cell project.
2. Plan and design the project utilizing flow charts and gnat charts.
3. Evaluate equipment application and specifications.
4. Develop project documentation including written descriptions, equipment lists, and electrical prints of work cell equipment and assemblies.
5. Assemble, wire, and configure an automated work cell.
6. Design and assemble a programmable control program.

**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, robotic control lab facilities and equipment

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

This course covers basic industrial automation principles through applied theory and practical lab applications. The course will cover the individual components and system interfacing that it takes to create a total automatic work cell. The construction, programming, and operation of industrial process are presented through hands on exercises. Lab exercises may require integrating pneumatic, position sensing, and motion control into work cells controlled by a programmable logic controller. The planning and application of work cell equipment will require in depth review of manufacture's operating manuals and documentation. The completed project must be accompanied by prints and documentation.

**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		

Distribution: Original – Administrative Office, Library, Learning Center, Records, Student Services