

MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

Course Outline

Course Title: Automation Lab
Semester Course Prefix and Number: PAS 2268
Old Quarter Course Prefix and Number:

Submitted By: Scott Norcia
Approval Date:
Revision Date: 11/23/11

Number of Credits: 2
Semester(s) Offered: Fall
Class Size: 24

Number of Lecture Credits: 0
Number of Lab Credits: 2
Number of Lab Hours: 4
Number of Studio/Demonstration/Internship Credits:

Negotiated by AASC on:
(date)

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 course builds the principles and knowledge acquired in previous PAS 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/PAS 1253, EIAT/PAS 1233, EIAT/PAS 1243, EIAT/PAS 1295, & EIAT/PAS 1244

Reading Prerequisite:

Composition Prerequisite:

Mathematics Prerequisite:

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. _____ Mathematical/Logical Reasoning
 5. _____ History and the Social and Behavioral Sciences

10. _____ People and the Environment

Learning Outcomes: (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Upon completion of this course, the student will be able to:

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.

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

Outline or Statement of 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.)

None

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

None

Approvals:

Body	Representative Signatures	Date
Curriculum Committee	<i>Amy R. Kohn</i>	11-29-11
Faculty Association	<i>She Dewdney</i>	12-5-11
Academic Affairs Standards Committee	<i>Amy R. Kohn</i>	11-29-11
Chief Academic Officer		

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