Course Title: Industrial Pneumatics
Semester Course Prefix and Number: ECM 1244
Submitted By: Scott Norcia
Approval Date: 8/31/16

Number of Credits: 2
Number of Lecture Credits: 0
Number of Lab Credits: 2
Number of Lab Hours: 4
Class Size: 24

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 course covers the general fundamentals of machine control utilizing pneumatics and electro-pneumatics. Concentrates on pneumatic systems, control devices and actuators related to machine control with practical applications involving robotic workcells, pick and place robots, part handlers, motion control and interfacing of air and electrical circuits.

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. None
1. Communications
2. Critical Thinking
3. Natural Sciences
4. Mathematical/Logical Reasoning
5. History and the Social and Behavioral Sciences
6. The Humanities and Fine Arts
7. Human Diversity
8. Global Perspectives
9. Ethical and Civic Responsibility
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.) Work safely with pneumatic fluid power systems.
2.) Identify the basic schematic symbols related to pneumatic devices.
3.) Apply the laws of physics related to temperature, pressure and volume.
4.) Apply the laws of physics related to force, pressure and area.
5.) Identify and use simple pumps and compressors.
6.) Identify and use directional and variable flow rate control valves.
7.) Identify and use pneumatic actuators.
8.) Observe proper safety procedures.
9.) Work cooperatively.
10.) 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:**

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**Distribution:** Original – Instructional Services

**Copies:** Transfer Specialist, Originating Faculty Member, Records

**Revised:** December 2012