Moberly Area Community College
Common Syllabus

IND105 Fluid Power Principles Syllabus
Current Semester

Instructor:
Office number:
Office hours:
Response time:  I typically respond to student emails within 24 hours, Monday through Friday.
Contact information:
Classroom number:
Class days and time:

Catalog Description:  IND105 Fluid Power Principles       (2-2-3)
This course addresses the practical application of fluid power principles used in the installation, maintenance, and troubleshooting of industrial hydraulic and pneumatic systems and equipment.  Topics include basic hydraulic and pneumatic principles and theory, identification of systems components and equipment, interpretation of fluid power symbols and drawings, and the application of fluid power knowledge and skills to industrial maintenance and troubleshooting.

Prerequisite/Co-requisite:
None.

Text(s):
Lab Volt, Pneumatics Fundamentals, 31290-00, Lab Volt

Lab Volt, Electrical Control of Pneumatic Systems, 31300-00, Lab Volt

Parker, Fluid Power Basics, Revision 93, Parker Hannifin Publisher

Other Required Materials:

Purpose of Course:
In this 64 contact hour lecture/lab workshop, participants will learn the practical application of fluid power principles used in the installation, maintenance and troubleshooting of industrial hydraulic and pneumatic systems and equipment.  Course topics include:  basic hydraulic and pneumatic fluid power principles and theory; identification of systems components and
equipment; interpretation of fluid power symbols and drawings; and the application of fluid power knowledge and skills to industrial maintenance and troubleshooting.

**Course Objectives:**
Upon successful completion of this course, students will be able to:

- To list and explain fluid power laws and principles related:
  - Pressure, force, work and energy
  - The law of the conservation of energy
  - Pascal’s Law
- Students will be able to list basic fluid power hardware system components; identify components; and describe the function of each used in:
  - Hydraulic systems
  - Pneumatic systems
- Students will be able to demonstrate the ability to read, interpret, and/or draw basic fluid power:
  - Symbols used in hydraulics and pneumatics
  - Drawings and blue prints used in industrial applications
  - Hydraulic and pneumatic diagrams used for troubleshooting.
- Students will be able to demonstrate basic understanding of fluid power systems use, applications, maintenance, troubleshooting, and safety procedures used by maintenance mechanics in industry.
- Students will be able to plumb and hook-up basic fluid power circuits and components.

**Course Content:**

- Principles of hydraulics and formulas
- Symbols, diagrams and drawings
- Reservoirs and accumulators
- Piping, tubing, hoses and fittings
- Cylinders
- Pneumatic principles and formulas
- Compressors
- Pneumatic pressure relief & control valves
- Fluid power troubleshooting
- Hydraulic fluids
- Hydraulic strainers and filters
- Hydraulic pumps
- Directional control valves
- Hydraulic motors
- Pneumatic symbols, drawings and diagrams
- Primary and secondary air treatment
- Basic air logic functions
- Fluid power print reading

**Connection with Career and Technical Education (CTE) Outcome Statement:**
In compliance with MACC’s CTE outcomes, the student who successfully completes this course will be able to:

- Students will demonstrate effective written and oral communication skills.
- Student will demonstrate an understanding of discipline-related math and scientific principles.
- Students will think critically while systematically assessing problems, identifying issues and implementing solutions.
ASSESSMENT OF STUDENT LEARNING

Grading Scale:
A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = 59% or below

Expected Study Time Commitments:
Students should expect to spend approximately 2 to 4 hours per week studying, reading, and working on assignments for each registered credit hour. For example, 6 to 12 study hours per week may be expected for a 3-credit hour class.

Assessment:
(State the way learning outcomes will be measured. They may be measured through, but not limited to, the following: objective and essay questions, papers, quizzes, oral presentations, class participation, small group work, and/or projects.)

Description of Assignment(s)/Project(s):

INSTRUCTOR POLICIES

Tardiness:
per instructor’s policy

Make-up and late work:
per instructor’s policy

Extra-credit work:
per instructor’s policy

Schedule of Student Assignments/Activities:
(Instructors will identify a Student Assignment/Activities schedule. Instructors have the prerogative to construct the schedule by class periods, weeks, or an overview of topics to be covered.)

Other:
List any other instructor policies

COLLEGE POLICIES
**Attendance:**
Students are expected to attend all class sessions for which they are enrolled. The College reserves the right to drop or withdraw students from courses due to lack of attendance.

Students need to be aware that dropping/being dropped from a course and their last date of attendance in the course may impact their financial aid.

MACC faculty are required to track attendance and report lack of attendance. An instructor must complete the appropriate steps to drop a student within one week following the student’s violation of the attendance policy. Additionally, a student’s attendance rate will be calculated based upon the first day the academic session begins (not the student’s date of enrollment in the course). If a student does not attend a course as defined below, the student will be dropped as “Never Attended.”

**Term Length Drop Calculations**

- **16-week:** Any student who misses two (2) consecutive weeks of class will be dropped from the course by the instructor unless acceptable justification is provided by the student and the student still has the opportunity to be successful in the course.

- **8-week:** Any student who misses one (1) consecutive week of class will be dropped from the course by the instructor unless acceptable justification is provided by the student and the student still has the opportunity to be successful in the course.

- **4-week:** Any student who misses two (2) consecutive days of class will be dropped from the course by the instructor unless acceptable justification is provided by the student and the student still has the opportunity to be successful in the course.

- **Intersession:** Any student who misses one (1) day of class will be dropped from the course by the instructor unless acceptable justification is provided by the student and the student still has the opportunity to be successful in the course.

Acceptable justification may include, but is not limited to, family emergencies, illness or injury, college-approved co-curricular and extra-curricular activities, and religious holidays.

**Definition of Course Attendance**

<table>
<thead>
<tr>
<th>In Seat Course</th>
<th>Physically attending scheduled, face-to-face, class meetings</th>
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<tr>
<td>Virtual Course</td>
<td>Being present, via appropriate platform, for scheduled class meetings/activities</td>
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Hybrid Course

Physically attending scheduled, face-to-face, class meetings and active participation in the online portion of the course which may include any or all of the following:

- Completion of quizzes or exams during class meetings and online
- Submission of assignments during class meetings and online
- Participation in discussions during class meetings and online

Online Course

Active participation in an online course includes the following:

- Completion of quizzes or exams
- Submission of assignments
- Participation in threaded discussions

Simply logging into the Learning Management System (Canvas) and/or accessing the course and course related material does not constitute active participation for the online component of hybrid courses or for online courses. (Policy Handbook, G.040)

Academic Dishonesty:

MACC board policy is as follows: “Academic dishonesty by students damages institutional credibility and unfairly jeopardizes honest students; therefore, it will not be tolerated in any form.” Forms of academic dishonesty include but are not limited to the following: violations of copyright law, plagiarism, fabrication, cheating, collusion, and other academic misconduct. Incidents of dishonesty regarding assignments, examinations, classroom/laboratory activities, and/or the submission of misleading or false information to the College will be treated seriously. The procedure for handling academic dishonesty is outlined in the Student Handbook (Policy Handbook G.020). In cases of alleged academic dishonesty, the burden of proof is on the student, not on the instructor.

Recording Class Sessions Using Zoom:

The privacy of students is a priority in live or virtual meetings. Recordings of lectures or class meetings that share student information constitute an educational record and are protected under FERPA. Instructors may share recordings within the course section where they were originally recorded and only with the students enrolled in the section. Documented consent from each student identified in the recording is required to distribute outside of the course where it was originally recorded, or student identity must be redacted.

Student Email:

MACC Mail is the official student email system at MACC. Official college communication is sent via this email system. Students are responsible for checking their MACC Mail account regularly. Students may also receive notifications and reminders from MACC through the online learning platform. However, students should remain aware that the online learning platform messaging system and MACC Mail (student email) system are two separate systems.
**ADA Statement:**
Students who have disabilities that qualify under the Americans with Disabilities Act may register for assistance through the Office of Access and ADA Services. Students are invited to contact the Access Office to confidentially discuss disability information, academic accommodations, appropriate documentation and procedures. For more information, please call either the Moberly office at (660) 263-4100 Ext. 11240 or the Columbia office at (573) 234-1067 Ext. 12120, or visit our web page at [http://www.macc.edu/index.php/services/access-office](http://www.macc.edu/index.php/services/access-office).

**Title IX Statement:**
MACC maintains a strict policy prohibiting sexual misconduct in any form, including sexual harassment, sexual discrimination, and sexual violence. All MACC employees, including faculty members, are considered mandated reporters of sexual misconduct and as such are expected to contact the Title IX Coordinator when they become aware, in conversation or in writing, of an incident of sexual misconduct. For more information on this policy or to learn about support resources, please see [http://www.macc.edu/sexual-misconduct-policy](http://www.macc.edu/sexual-misconduct-policy) or contact Ms. Cheryl Lybarger, MACC's Title IX Coordinator, at 660-263-4110, ext. 11369 or CherylLybarger@macc.edu.