I. **Title**: Introduction to Fluid Power Systems Laboratory

II. **Catalog Description:**

    Laboratory course must be taken concurrently with EMT 261. Two hours laboratory per week. (Fall)

III. **Purpose:**

    This course is a required technical support course laboratory designed to familiarize beginning Manufacturing Engineering Technology students with the basic fluid power components and circuits used in industry.

IV. **Course Objectives:**

   A. **General Course Objectives**

       Familiarization with real industrial grade fluid power components and controllers.
       Introduction to the many and varied hydraulic and pneumatic applications, the general fluid power system concept, and the principles of applied fluid mechanics. The student will develop an effective technical documentation writing skill.

   B. **Specific Objectives:**

       As a result of this course each student will:

       (1) Develop an individual laboratory technique for facilitating engineering solutions by utilizing critical thinking and problem solving skills.
       (2) Demonstrate proficiency in measurement of basic fluid system parameters (pressure, temperature, flow, work performance and efficiency) and written report communication.
       (3) Develop a schematic drawing, construct and test both hydraulic and pneumatic systems.
       (4) Given the minimum fluid power system requirements design and size a simple single circuit to accomplish the task.
       (5) Effectively document the laboratory process, theory, and results.

V. **Course Outline:**

    - Fluid Viscosity
    - Industrial Circuits
    - Fluid Power Pumps
    - Simple PLC Control
    - Power Unit
    - Actuators
    - Flow Control Valves
    - Pressure Control Valves
    - Ancillary Devices
VI. Instructional Activities:

Course will consist of laboratory experiments demonstrating the fluid power principles taught in EMT 261. This course is heavily oriented towards written communication of technical results either supporting or disproving theory.

VII. Field and Clinical Experiences:

None

VIII. Resources:

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<thead>
<tr>
<th>Fluid Power Laboratory</th>
<th>Computer Laboratory</th>
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<tr>
<td>Operational Components</td>
<td>Computer Software</td>
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IX. Grading

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<th>Lab and Reports</th>
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X. Attendance:

Attendance is required at all lectures and laboratories.

XI. Academic Honesty Policy:

Cheating, plagiarisms, submitting another person's material as one's own, or doing work for another person who will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, laboratory reports, drawings or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may result in failure of the course.

XII. Required Text(s) and Manuals(s):

"Fluid Power with Applications" 7th Edition, by Anthony Esposito
Lab Handouts

XIII. Prerequisites:

MAT 130, or consent of instructor

XIV. Statement of Affirmative Action and Equal Opportunity:

"Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities."

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