

**Course Evaluation Measures Menu**

**Course number: ELM 252**

**Course title: Fluid Power**

**Campus location(s): Dover**

**Effective semester: 202251**

**Core Course Performance Objectives**

1. Explain hydraulic/pneumatic fundamentals, and describe the purpose of hydraulic pumps, air compressors, actuators, and motors. (CCC 4, 6; PGC 2, 3, 4)
2. Distinguish hydraulic control valves, electrical control valves, pneumatic control valves, and explain their use in controlling fluid-based systems. (CCC 4, 6; PGC 2, 3, 4)
3. Discuss fluids and fluid conditioning and hydraulic and pneumatic power distribution. (CCC 4, 7; PGC 2, 3, 4)
4. Assemble and troubleshoot hydraulic and pneumatic circuits. (CCC 1, 3, 4, 6; PGC 1, 2, 3, 4).
5. Design a control system for fluid power circuits by combining programmable logic controllers with hydraulic and pneumatic devices. (CCC 1, 3, 4, 6; PGC 2, 3, 4, 5)

**Summative Evaluations**

*Please note: All courses must have a* ***minimum******of four*** *summative evaluation measures, and those measures should include a variety evaluation methods (e.g., test, oral presentation, group project).* ***Please list all summative evaluation measures.*** *In addition to these summative measures, a variety of formative exercises/quizzes/other assignments should be used to guide instruction and learning* *but do not need to be included on this template.*

*For each measure, please include a scope of the assignment: for example, if requiring a research paper, include the range of required number of words and numbers and types of sources; for a test, include the types and numbers of questions; for a presentation, include the minimum and maximum time, and so on.*

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| **CCPO** | **Evaluation Measures:** Include each agreed upon measure and scope of that measure (see above). |
| 1. Explain hydraulic/pneumatic fundamentals, and describe the purpose of hydraulic pumps, air compressors, actuators, and motors.
2. Distinguish hydraulic control valves, electrical control valves, pneumatic control valves, and explain their use in controlling fluid-based systems.
 | * Hands-on laboratories
* Reading assignments with short answer questions
* 4 Exams: 30-60 questions including true/false, short answer, and problem solving including hands-on lab components
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| 1. Discuss fluids and fluid conditioning and hydraulic and pneumatic power distribution.
 | * Hands-on laboratories with short answer submissions
* Research Project with final presentation/ demonstration
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| 1. Assemble and troubleshoot hydraulic and pneumatic circuits.
 | * Hands-on laboratories about Facility Design with short answer submissions
* Quizzes
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| 1. Design a control system for fluid power circuits by combining programmable logic controllers with hydraulic and pneumatic devices.
 | * Hands-on laboratories about with short answer submissions
* Research Paper
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**FINAL COURSE GRADE**

(Calculated using the following weighted average)

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| **Evaluation Measure** | **Percentage of final grade** |
| Summative: 4 Exams (equally weighted) | 30% |
| Summative: 20 Quizzes (equally weighted) | 2% |
| Summative: 24 Laboratory (equally weighted) | 32% |
| Formative: 19 Reading Assignments / short answers (equally weighted) | 9.5% |
|  Formative: Research Paper | 20% |
|  Formative: Class Participation | 6.5% |
| TOTAL | 100% |

 (Electronic Signature Permitted)

**Submitted by (Collegewide Lead):** \_\_\_\_James Horst, P.E.\_\_ Date \_\_\_5-27-20\_\_\_\_\_\_\_\_

**[ ]  Approved by counterparts**  Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**[x]  Reviewed by Curriculum Committee**  Date \_\_8/4/20\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_