# Master Course Syllabus

*For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/*

**Semester:** Spring
**Year:** 2025
**Course Prefix:** DMT
**Course and Section #:** 2310- 001
**Course Title:** Fluid Power I
**Credits:** 3

## *Course Description*

Teach the fundamental principles of fluid power. Explain the relationship between pressure, force, area, and resistance as well as rpm, torque, hydraulic horsepower, and energy. Cover the application and operation of all of the essential components found in a hydraulic system. Introduce various types of circuit designs and schematic symbols. Provide practical lab experience related to the identification, operation and repair of basic hydraulic system components and circuits. Utilize various lab equipment or machinery to familiarize the student with basic system designs and use of schematics. Highlight the use of tools and diagnostic equipment for component and system testing. Emphasize proper safety in all service/repair work. Demonstrate basic proficiency in applying theoretical concepts to assigned lab tasks.

## *Course Attributes*

This course has the following attributes:

☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☒ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☐ Open Elective

Other: *Click here to enter text.*

## *Instructor Information*

**Instructor Name:** Kent Walker

## *Student Learning Outcomes*

1. Identify the correct hydraulic fittings, hoses, seals, and related sealing components for the proper applications.
2. Identify leakage problems due to incorrect usage of hydraulic fittings, hoses, seals, and related sealing components for the proper applications.
3. Solve hydraulic math problems using pascals law, formulas for flow, horsepower, fluid velocity, and torque.
4. Identify the parts of a hydraulic cylinder and assess the conditions of a cylinder that leaks internally or externally.

5 Explain the operation of gear, vane, and piston type pumps and motors, as well as related cavitation and aeration problems associated with these components.

6 Describe the operation of reservoirs, coolers, filters, and accumulators used in a hydraulic system.

7 Describe the appropriate maintenance of reservoirs, coolers, filters, and accumulators used in a hydraulic system.

8 Explain the operation and function of, pressure, flow, and directional valves in a hydraulic circuit.

9 Identify hydraulic components by their associated ANSI schematic symbols.

## *Course Materials and Texts*

Mobile Hydraulics-Eaton Corporation (ISBN 0-9634162-5-1)

## *Course Requirements*

**Theory Grading Criteria:**

- Tests 35%
- Class Assignments 25%
- Quizzes/Attendance** 20%
- Oral Presentation 20%

***Tests:***

Test will be taken in class upon completion of a specified number of chapters covered. Because testing will be done in class, you must be there on the day of the test, or have made ***prior*** arrangements to take the test at a different time because of extenuating circumstances. If not and you miss the test *you will not be allowed to make up the test*!!

***Class Assignments***:

Assignments will be posted on 'Canvas'. All assignments will be submitted through 'Canvas'. Assignments will be turned in on time in order to avoid point's reduction. Point value will be reduced by 10% for each day late to a total of 3 days late after 3 days assignment will not be accepted.

***Attendance:***

Attendance will be taken from the time cards. Each student will be required to clock in and out for both lab as well as for theory. **No student is allowed to clock in or out for any other student.** If a student leaves class early without making prior arrangements with the instructor, he/she will be marked absent or tardy for the day depending upon the severity. Do not write in times. **Any student with 6 or more unexcused absences will not pass this class.

**Grading scale for Attendance;**

| | |
|---|---|
| 0-1 Days Absent = No Penalty | 2-3 Days Absent = 2 points lost/day |
| 4-5 Days Absent = 5 points lost/day | 6+ Days Absent = 10 points lost/day until points balance reaches 0 |

***Quizzes:***

Up to four quizzes a week will be given during theory. The quiz will consist of 1-5 questions based on material covered in the previous lecture and/or previous reading assignment. There is no make up for missed quizzes.

***Oral Presentation:***

The oral presentation will be based on trouble-shooting a hydraulic related problem/break down. Grading for this presentation is as follows:

- Clearly defining the problem 15%
- Technical information included 15%
- Visual aid use 15%
- Proper steps used to solve the issue 15%
- Thoroughness and accuracy of subject matter 15%
- Student's ability to follow <u>all</u> of the above oral presentation instructions 25%

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**Required or Recommended Reading Assignments**

| Week | Subject | Text<br>Reading assignment | Assignments<br>Due as announced |
|---|---|---|---|
| 1 | Safety, Fittings, Seals, Conductors etal | Ch. 15, Supplement/ Handout | Questions as assigned |
| 2 | Hydraulic Theory, Cylinders, & Schematic Symbols | Ch. 2, 4, | Questions as assigned |
| 3 | Hydraulic Theory, Cylinders, & Schematic Symbols | Ch. 2, 4, | Questions as assigned |
| 4 | Pumps, | Ch. 12, 13 | Questions as assigned |
| 5 | Valves | Ch. 7, 10, 9 | Questions as assigned |
| 6 | Reservoirs, Coolers, Fluid Filtration, and Accumulators | Ch. 11, 16, 17, 18, | Questions as assigned |
| 7 | Diagnosis, Testing, Systems, Maintenance, Final | Ch. 14, 15 | Questions as assigned |

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**General Description of the Subject Matter of Each Lecture or Discussion**

| Week | Subject | Text<br>Reading assignment | Assignments<br>Due as announced |
|---|---|---|---|
| 1 | Safety, Fittings, Seals, Conductors etal | Ch. 15, Supplement/ Handout | Questions as assigned |
| 2 | Hydraulic Theory, Cylinders, & Schematic Symbols | Ch. 2, 4, | Questions as assigned |
| 3 | Hydraulic Theory, Cylinders, & Schematic Symbols | Ch. 2, 4, | Questions as assigned |
| 4 | Pumps, | Ch. 12, 13 | Questions as assigned |
| 5 | Valves | Ch. 7, 10, 9 | Questions as assigned |
| 6 | Reservoirs, Coolers, Fluid Filtration, and Accumulators | Ch. 11, 16, 17, 18, | Questions as assigned |
| 7 | Diagnosis, Testing, Systems, Maintenance, Final | Ch. 14, 15 | Questions as assigned |

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## *Required Course Syllabus Statements*

**Generative AI**
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**Using Remote Testing Software**
☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

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## *Required University Syllabus Statements*

**Accommodations/Students with Disabilities**
Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

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**Academic Integrity**
At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

**Equity and Title IX**
Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

**Religious Accommodation**
UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.
To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.