Course Syllabus
SEMESTER
School of Technology

Course Name:	**Fluid Power: Hydraulics**
Course & Section Number:	**SKT-151-XXX**
Meeting Day(s) & Time(s):	
Credits:	**3**
Contact Hours:	**64**
Text:	**Industrial Hydraulics Manual, 7th Ed. by Danfoss** **ISBN 9798218158002**
Instructor's Name:	
Office Hours & Location:	
OCC Phone:	
OCC Email:	

If you have a preferred name, please let me know so I can use it. Please use only Owens email for course communications.

Catalog description:
Introduces hydraulic laws and principles. Also covers pumps, valves, cylinders, motors, ANSI symbols and color codes.
Prerequisite/Corequisites:
MTH 143 or equivalent with "C" or better

Course Materials:

Industrial Hydraulics Manual, 7th Ed. by Danfoss

Pencil, eraser, ruler, pocket calculator (provided by student)

*If a **print book, e-book, or access code** is required for class, you can access the Owens Community College e-Campus Bookstore by accessing the online link, called "Find Books" on the course schedule for each course section. See the example below.*

OER and Owens Community College Library Resources *(Open Educational Resources are free online materials for instructor and student use. Some OER material may be available in print in the Owens Community College Library.)*

Inclusive Access (I.A.) Materials *are included in the cost of the course to save students money through lower negotiated rates with publishers. Courses containing I.A. materials will have it noted on the online class schedule. If your course includes I.A. digital materials, you will receive an email with subject line, "Your inclusive Access Materials," and it will include any codes or digital links.*
The email will come to your Owens Community College email from the Owens e-Campus Bookstore on the first day of class, if not before. Be sure to check your spam (junk email) if you do not find it in your inbox. If the email is not in your inbox or spam folder, contact your instructor immediately. You may also see a folder at the top of your course labelled "Course Materials by eCampus." This folder will contain any needed codes or links to needed materials.
If the I.A. materials also include a printed book or are in print form, the item will be shipped to your address of record automatically based on your enrollment in the course. Please note that some courses do not include printed materials in I.A and those materials would need to be purchased separately using the link on the course schedule. When you access the Find Books link you will see which items in a course are included in I.A.

What You Will Learn in the Course

Course Objectives:
Course will equip individuals with the knowledge and skills to understand, operate, maintain, and troubleshoot hydraulic systems. Key objectives include learning basic hydraulic principles, understanding system design, identifying components, interpreting circuit diagrams, and practicing safe operation. Furthermore, students will develop the ability to apply these skills in practical scenarios, such as circuit construction, troubleshooting, and preventative maintenance.

Student Learning Outcomes:
Students will:

Outcome	Where Assessed
Understand fluid power systems, Pascal's Law, pressure, flow, and force calculations.	Chapter 1 and 2 Study Guide Responses, Amatrol/Vickers Lab 1-10, Evaluation 1 and Final Exam
Demonstrate ability to use and select hydraulic fluids for maximum utility	Chapter 3 Study Guide Responses, Amatrol/Vickers Labs 1-10, Evaluation 1 and Final Exam
Connect and demonstrate understanding of cylinder usage in hydraulic circuits	Chapter 7 Study Guide Responses, Amatrol/Vickers Labs 3-10, Evaluation 1 and Final Exam
Connect and demonstrate understanding of	Chapter 7 Study Guide Responses,

Outcome	Where Assessed
motor usage in hydraulic circuits	Amatrol/Vickers Lab 4, Evaluation 1 and Final Exam
Connect and demonstrate understanding of directional control valve usage in hydraulic circuits	Chapter 8 Study Guide Responses, Amatrol/Vickers labs 4-10, Evaluation 2 and Final Exam
Connect and demonstrate understanding of pressure control usage in hydraulic circuits	Chapter 10 Study Guide Responses and Amatrol/Vickers Labs 5-10, Evaluation 2 and Final Exam
Connect and demonstrate understanding of flow control device usage in hydraulic circuits	Chapter 11 Study Guide Responses, Amatrol/Vickers Labs 5-10, Evaluation 2 and Final Exam
Connect and demonstrate understanding of pump usage in hydraulic circuits	Chapter 15 Study Guide Responses, Amatrol/Vickers Labs 1-10, Evaluation 2 and Final Exam
Connect and demonstrate understanding of conductor and seal usage in hydraulic circuits	Chapter 4 Study Guide Responses, Amatrol/Vickers Labs 1-10, Evaluation 3 and Final Exam
Connect and demonstrate understanding of reservoir usage in hydraulic circuits	Chapter 5 Study Guide Responses, Amatrol/Vickers Labs 1-10, Evaluation 3 and Final Exam
Utilize common symbology to draft and interpret hydraulic schematics	Chapter 1-15 Study Guide Responses, Amatrol/Vickers Labs 1-10, Evaluation 1, 2 and 3 and Final Exam

Program Outcomes:
The following program outcomes are assessed in this course

Outcome	Where Assessed
Clean, maintain and perform planned preventative maintenance (PPM) on equipment and machinery.	Amatrol/Vickers Labs 1-10
Conceptualize, sketch and draw design projects and components.	Study guide activities Chapter 3 and 4, Amatrol/Vickers Labs 5-8, Assessments 1, 2 and 3, Final
Produce professional documentation	Drawn schematics on Assessments 2 and 3, Final

Institutional General Education Competencies:
As a student at Owens Community College, you will take General Education courses as part of your degree program. While specific to the General Education courses, will be reinforced in many of your degree program major courses and may be measured in your capstone course(s) and others as identified.

Competency	Where Assessed
Communicate effectively.	All tests and the final
Act with professional responsibility.	Post lab questions, all tests and the final
Demonstrate sensitivity to others' beliefs and values.	Research papers on hydraulics in careers and completed schematics
Think analytically, critically, and creatively.	Post lab questions

Technology, Lab, and File Requirements:
You must bring your own safety glasses, closed toed non-skid shoes and clothing without loose sleeves or drawstrings.

Academic Support

Disability Services Resource Center: If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email disability@owens.edu, visit https://www.owens.edu/disability/, or stop by College Hall 124.

Tutoring Services: Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: https://www.owens.edu/successcenters/.

Counseling Services: Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at counselingservices@owens.edu. More information is at https://www.owens.edu/counseling/.

Campus and Community Connections: The Center for Campus and Community Connections (College Hall 151) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: https://www.owens.edu/connection/ or contact connections@owens.edu

Owens Library: The Owens Library offers two locations (Toledo and Findlay) as well as online resources. For more information visit https://www.owens.edu/library/.

Students can find more information on campus resources, student support, student life, and security at this link.

General Information

Student Code of Conduct: All students are expected to follow Owens Community College's Student Code of Conduct, which includes academic honesty, encompassing plagiarism. See the Board Policy for more information.

Anti-Discrimination and Harassment & Title IX/Sexual Misconduct: All students, faculty, and staff are expected to follow Owens Community College's Anti-Discrimination and Harassment Policy and the College's Title IX Policy/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

Religious Accommodations: A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: provost@owens.edu The policy may be found on the Owens website: 3358:11-2-63 Accommodation for a Student Absence for the Observance of Religious Beliefs and Practices Policy

Document Collection: Throughout the semester, your instructors may ask for a variety of assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

Classroom Admittance: OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See FERPA regulations for more information.

Use of AI Tools: This course requires you to complete various assignments that assess your understanding and application of the course content. You are expected to do your own work and cite any sources you use properly. You are not allowed to use any artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to complete any part of your assignments. Any attempt to use these tools will be considered academic misconduct and will be dealt with according to the Owens Community College academic integrity policy. Students are expected to complete all work independently and without the assistance of AI-generated content. If you have any questions about what constitutes acceptable use of AI tools, please consult with the instructor *before* submitting your work.

Student Responsibilities & Instructor Expectations

Late Work (work turned in after assigned due date)

1. Blackboard Exams must be taken during the posted time frame. In class exams must be taken during class. Extenuating circumstances, such as school approved absences will be offered make-up exams. (Bereavement, Hospitalization, etc.)

2. Online tests/quizzes/homework will have due-date limits set. You must complete the online work within the specified time frame. After the time limit (due-date) is reached, the form will stop accepting responses.

3. Hardcopy work (paperwork assignments) -- 5% of grade will be deducted for each calendar day late.

4. Work turned in after 7 calendar days will be evaluated by instructor, but the student will receive no more than 50% for their grade on the assignment. After 10 calendar days the student will receive a zero.

Specific Course Rules

Safety is our number one concern in both the lab setting and classroom. Any student that is found to cause a hazardous situation either to themselves or others will be removed from the lab/classroom. All students in the classroom/lab should be able to feel safe and receive a positive learning environment.

Cell phones and devices: Over the past few years cell phones have become a major issue in the classroom and lab. The phones and other devices become a major distraction to the learning environment if not used correctly. Students will have projects to be working on when bookwork is done; there is limited need for them to have their phones or electronics out in class.

“Personal digital devices equipped with picture taking or video capabilities, text messaging, and Internet access can add value to the learning process when used appropriately.” Student personal digital devices that are brought to college or enroute to or from college or any college sponsored activity;

•Remain the sole responsibility of the owner. The college is not liable for damage, loss, or theft.

•At the college level may be used responsibly during non-instructional time and/or during instructional time for educational purposes when requested and supervised by a staff member.

•With video or picture taking ability may not be used at any time or place where individuals have an expectation of privacy such as restrooms or locker rooms.

•Photographs or images of individuals may not be taken or recorded without the person’s knowledge and permission.

•May not be used to harass, intimidate, or bully anyone, at any time.

•May not be used in any way that detracts from the “learning environment of the college.”

Bullying is a serious topic in any setting. Bullying will not be tolerated and if a student is found to be unable to conduct themselves properly they will be reported to the office and college policies will be followed. This may include the student being removed from the Program. All students deserve a positive learning environment. Please contact me if there is ever an issue. I cannot help if I don’t know there’s an issue!

How Grades and Determined and Major Assignments

Evaluation Measure The grade points for the areas of work are as follows.	**Student Learning Outcomes Assessed**	**Value**
Evaluation 1	1-5	50 points
Evaluation 2	5-8	50 points
Evaluation 3	9-11	50 points
Final	1-11	100 points

The final course grade is to be computed using the following average point distributions.

Evaluation Measure	**Value**	**Student Learning Outcome Assessed**
Class Participation:	10 %	1-12
Activities:	20%	1-12
Homework:	20%	1-12
Assessments:	30%	1-12
Final Exam:	20%	1-12

Grading Procedure:
Grades will be calculated on the following scale.

90% and Above	A
80% to Less than 90%	B
70% to Less than 80%	C
60% to Less than 70%	D
Less Than 60%	F

Tentative Class Assignments:

Session	**DATE Class**	**SLO**	**Topic**
1	**DATE**	**1**	**Topic:** Fundamentals of Fluid Power **Readings:** Chapter 1 **Lab:** Amatrol/Vickers Introduction
2	**DATE**	**1 & 2**	**Topic:** Principles of Hydraulics **Readings:** Chapter 2 **Lab:** Amatrol Lab 1
3	**DATE**	**3**	**Topic:** Hydraulic Systems and Fluids **Readings:** Chapter 3 **Lab:** Amatrol Lab 2
4	**DATE**	**4**	**Topic:** Assessment 1 **Lab:** Amatrol Lab 3/Vickers Lab 1
5	**DATE**	**5**	**Topic:** Cylinders **Readings:** Chapter 7 **Lab:** Hands-on projection lab

Session	DATE Class	SLO	Topic
6	**DATE**	**7**	**Topic:** Hydraulic Motors **Readings:** Chapter 7 **Assignment:** Careers in hydraulics write up **Lab:** Amatrol Lab 4/Vickers Lab 2
7	**DATE**	**8**	**Topic:** Directional Control Valves **Readings:** Chapter 7 with study guide, **Lab:** Amatrol Lab 5/Vickers Lab 3
8	**DATE**	**9**	**Topic:** Assessment 2 **Lab:** Amatrol Lab 6/Vickers Lab 3
9	**DATE**	**9**	**Topic:** Pressure Controls **Readings:** Chapter 10 **Lab:** Amatrol Lab 6/Vickers Lab 4
10	**DATE**	**10**	**Topic:** Flow Controls **Readings:** Chapters 11 **Lab:** Amatrol Lab 7/Vickers Lab 5
11	**DATE**	**10**	**Topic:** Pumps **Readings:** Chapter 15 **Lab:** Amatrol Lab 8/Vickers Lab 6
12	**DATE**	**11**	**Topic:** Assessment 3 **Lab:** Amatrol Lab 9/Vickers Lab 7
13	**DATE**	**8-11**	**Topic:** Conductors and Seals **Readings:** Chapter 4 **Assignment:** Drawn schematic of common circuit **Lab:** Amatrol Lab 10/Vickers Lab 8
14	**DATE**	**1-11**	**Topic:** Reservoirs **Lab:** Vickers Lab 9
15	**DATE**	**1-11**	**Final Exam**

Disclaimer: The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course. Please note that while unlikely, there is a possibility courses might need to change the delivery method due to external issues like public health concerns, weather issues, etc. If this happens, the college will communicate any changes via email and/or other communication methods.