

AGRICULTURAL SYSTEMS MANAGEMENT (ASM)
ASM 429: **Hydraulic Principals and Applications**

Class Information:

Credit – 3

Spring 2020

Class Room: ABEN 208

Time: 11:00 – 11:50 am Tues. and Thurs.

Labs are either Tues. at 2:00-4:50 pm or Fri. at 9:00-11:50 am

Instructor:

Matt Olhoft

ABEN 204

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Office Hours: By appointment or drop in. Usually available Tuesdays and Thursdays 8-5.

Course Description: Overview of agricultural hydraulics in terms of efficiencies, sizing, buying, using, comparing and maintaining.

TEXT: "Hydraulics", Deere and Company, 8th edition 2015

COURSE OBJECTIVES:

1. To develop an introductory understanding of basic agricultural hydraulics.
2. To develop good problem solving skills and to learn to look for alternative solutions to problems in regards to use of hydraulics.
3. To solve basic, applied, and practical problems of hydraulics on tractors and farm equipment.
4. To provide an introduction to higher level thinking and problem solving with hydraulics.

REQUIRED RESOURCES: Text book, non-spiral letter size paper for homework, pencil, eraser, basic calculator

BLACKBOARD: Blackboard will be used for announcements, class presentations, assignments, and temporary grades presentation

GRADING

<u>Items</u>		Total Points
Tests	(Four tests, 100 pts each)	400
Book Questions	(15 question sets, 10 pts each)	150
Lab points	(10 points per lab)	140
Quizzes	(2 quizzes, 10 pts. each)	20
		Total pts: 710

All the home works must be submitted on time. No late submissions are accepted for full credit.

(There may be extra credits for students in addition to the formal grading. So the total grade points can be more than 640).

The cut off for letter grades: 100-90.00% = A; 89.99-80.00% = B; 79.99-70.00% = C;
69.99-60.00% = D; 59.99% or lower = F

Exams and quizzes policies:

Students are expected to take the tests at the appointed time and date unless other arrangements are made with the instructor. The tests will be combinations of types of questions, which may include short answer, problems, multiple choice, and fill in the blank questions, depending on what works best for the material covered. Quizzes may be given throughout the semester and may be either announced or unannounced. There are no make-ups for quizzes or tests, except in medical, family emergencies, or interview cases. Missed tests, exams, and quizzes will receive zero points unless missed for an acceptable reason and with advance notification where possible. The final exam will be comprehensive. Marks will be deducted if steps are not shown in word problem(s) in the test(s).

Labs

Labs are held at the Service center shop and are “hands on”. You will be expected to work on various systems components to learn how they work and what they look like. You will be asked to analyze parts and determine function, if parts are good or bad, and how to re-assemble components. You will be graded on your analyses and the understanding you demonstrate through working on systems by answering questions verbally and in written form.

MISSING CLASSES or LABS

You are expected to attend all class and lab periods but there is no roll-call. If a class or lab is missed, contact the instructor or class mates for notes. The PowerPoint presentations will be posted in the blackboard. Labs will have to be made up as they are “hands on” you may make arrangements to visit another lab time or arrange a time with the instructor.

If you are unable to attend the class or lab, let the instructor know ahead of time by e-mail or other written formats.

IMPORTANT NOTIFICATION

Academic Honesty: All students taking any course in the College of Agriculture, Food Systems, and Natural Resources are under the Honor System

(<http://www.ag.ndsu.edu/academics/honor-system-1>). The Honor System is a system that is governed by the students and operates on the premise that most students are honest and work best when their honesty, and the honesty of others, is not in question. It functions to prevent cheating as well as penalize those who are dishonest. It is the responsibility of the students to report any violations of the honor pledge to the instructor, honor commission or the Dean of the College of Agriculture, Food Systems, and Natural Resources.

The academic community is operated on the basis of honesty, integrity, and fair play. [NDSU Policy 335: Code of Academic Responsibility and Conduct](#) applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the [Office of Registration and Records](#). Informational resources about academic honesty for students and instructional staff members can be found at www.ndsu.edu/academichonesty.

Students with special requirements: Any students with disabilities or other special needs, who need special accommodations in this course are invited to share these concerns or requests with the instructor as soon as possible. The instructor may ask for verification and that, plus other assistance, can be requested from Disability Services in Wallman Wellness Center 170 (231-8463). <http://www.ndsu.edu/disabilityservices/>.

Veterans and military personnel: Veterans or military personnel with special circumstances or who are activated are encouraged to notify the instructor as early as possible.

Important Dates

Spring 2020

[Variable Length Session Drop/Add Deadlines](#)

Date	Day	Description
Jan 1	Wed	HOLIDAY — New Year's Day Observed (<i>offices closed</i>)
Jan 13	Mon	Classes begin at 4:00 p.m.
Jan 14	Tue	First full day of classes
Jan 20	Mon	HOLIDAY — Martin Luther King, Jr. Day (<i>no classes, offices closed</i>)
Jan 22	Wed	Last day for Campus Connection Wait Lists to run
Jan 23	Thu	Last day to Add classes via Campus Connection* Permit needed after this date.
Jan 23	Thu	Last day for no-record Drop of classes @ 100% refund* (<i>full semester classes only</i>)

Jan 23	Thu	Last day to Withdraw to Zero Credits @ 100% refund* (<i>full semester classes only</i>)
Jan 23	Thu	Attempted credits calculated for financial aid SAP (11:59 p.m.)**
Jan 23	Thu	Eligible Pell/TEACH/ND Grants/Scholarships based on enrollment at 11:59 p.m.
Jan 28	Tue	Financial aid applied to NDSU account balances
Jan 29	Wed	Payments due for NDSU account balances*
Feb 3	Mon	Last day to submit requests to Audit, Pass/Fail
Feb 7	Fri	Undergraduate/Professional Spring and Summer Degree Applications due
Feb 7	Fri	Graduate student Spring Graduate Degree Applications due
Feb 10	Mon	Last day to Add full semester classes. Permit & Appeal needed after this date.
Feb 17	Mon	HOLIDAY — Presidents' Day (<i>no classes, offices closed</i>)
Feb 24	Mon	Last day to Withdraw to Zero Credits @ 75% refund* (<i>full semester classes only</i>)
Mar First	Week	Summer/Fall schedule available
Mar 6	Fri	Grades of 'Incomplete' convert to 'F'
Mar 9	Mon	2nd half (8-week session) of Spring semester begins
Mar 15	Sun	Late fee applied to unpaid account balances (11:59 p.m.)
Mar 16-20	Mon-Fri	Spring Break Week (<i>no classes, offices open</i>)
Mar 26	Thu	Last day to Withdraw to Zero Credits @ 50% refund* (<i>full semester classes only</i>) No refunds issued for withdraw to zero credits after this date.
Mar 30- Apr 19	Mon	Summer/Fall registration begins online based on total credits completed
Apr 9	Thu	Last day to Drop classes with 'W' record*
Apr 9	Thu	Last day to Withdraw to Zero Credits for Spring
Apr 10-13	Fri-Mon	HOLIDAY -- Spring Recess (<i>no classes, offices closed Friday, offices open Monday</i>)
Apr 15	Wed	Late fees applied to unpaid account balances (11:59 p.m.)
Apr 17	Fri	Graduate student Initial Disquisition submission for May graduation

Apr 20	Mon	Open registration for summer/fall
Apr 24	Fri	Spring Commencement Participation deadline
May 4-8	Mon-Fri	Dead Week
May 5	Tue	Grade entry begins
May 8	Fri	Last day of Spring classes
May 11-15	Mon-Fri	Final Examinations
May 15	Fri	Graduate student Final Disquisition copy due for May graduation
May 15	Fri	Late fees applied to unpaid account balances (11:59 p.m.)
May 16	Sat	Commencement ceremonies (10:00 & 2:00 in Fargodome)
May 19	Tue	Grades due (12:00 p.m.)

GENERAL CLASS SCHEDULE

Period	Date	Topic	Unit
1	Jan. 15	Introduction and Chapter 1	1
2	22	Chapter 1 (<i>chap 1 questions due</i>)	1
	Lab week 1	How hydraulics work. Analyze bottle jacks	
3	27	Chapter 2	2
4	29	Chapter 2 (<i>chap 2 questions due</i>)	2
	Lab week 2	Hydraulic safety. Learning safety signs	
5	Feb. 3	Chapter 3	3
6	5	Chapter 3 (<i>chap. 3 problems due</i>)	3
	Lab week 3	Hydraulic symbols. Learning symbol meanings	
7	10	Chapter 4	4
8	12	Test on chapters 1-4 (<i>chap. 4 problems due</i>)	
	Lab week 4	Hydraulic pumps. Analyze pumps	
9	19	Chapter 5	5
10	24	Chapter 5 (<i>chap. 5 problems due</i>)	5
	Lab week 5	Hydraulic valves. Analyze hydraulic valves	
12	26	Chapter 6	6
13	Mar. 2	Chapter 6 (<i>chap. 6 problems due</i>)	6
	Lab week 6	Hydraulic cylinders. Analyze hydraulic cylinders	

14	4	Chapter 7	7
15	9	Chapter 7 (chap. 7 problems due)	7
	Lab week 7	Hydraulic motors. Analyze hydraulic motors	
16	11	Chapter 8	8
17	23	Chapter 8 (chap. 8 problems due)	8
	Lab week 8	Hydraulic accumulators. Analyze accumulators	
18	25	Test on chapters 5-8	
19	30	Chapter 9	9
	Lab week 9	Hydraulic filters. Analyze various filters and types	
21	Apr. 1	Chapter 9 (chap. 9 problems due)	9
22	6	Chapter 10	10
	Lab week10	Reservoirs and coolers. Analyze systems functions	
23	8	Chapter 10 (chap. 10 problems due)	10
24	15	Chapter 11 (chap. 11 problems due)	11
	Lab week11	Lines and couplers. Identify various types	
25	20	Chapter 12	12
26	22	Chapter 12	12
	Lab week12	Hydraulic seals. Identify and replace seals	
27	27	Chapter 12 (chap. 12 problems due)	12
28	29	Test on chapters 9-12	
	Lab week 13	Hydraulic fluids. Use and identify fluid types	
29	May 4	Chapter 13	13
30	6	Chapter 13 (chap. 13 problems due)	13
	Lab week 14	Hydraulic maintenance. Practical solutions and I.D.	
31	Extra time	Chapter 14	14
32		Chapter 14 (chap. 14 problems due)	14
33		Chapter 15	15
34		Chapter 15 (chap. 15 problems due)	15

These are tentative dates for tests and material covered, the actual dates and material may vary. **That is why attendance is important.** Any change in schedule will be notified ahead of time as much as possible.

THE DATE FOR FINAL EXAM IS MONDAY, May 14 2020; 8:00 am.