North Central State College

MASTER SYLLABUS
2019-2020

A. Academic Division: Business, Industry and Technology

B. Discipline: Mechanical Engineering

C. Course Number and Title: MECT1750 Hydraulics and Pneumatics

D. Course Coordinator: Mike Beebe
Assistant Dean: Toni Johnson, PhD

Instructor Information:
- Name: Click here to enter text.
- Office Location: Click here to enter text.
- Office Hours: Click here to enter text.
- Phone Number: Click here to enter text.
- E-Mail Address Click here to enter text.

E. Credit Hours: 3
Lecture: 2 hours
Laboratory: 2 hours

F. Prerequisites: None

G. Syllabus Effective Date: Fall, 2019

H. Textbook(s) Title:

Fluid Power and Applications
- Author: Esposito
- Copyright Year: 2008
- Edition: Seventh
- ISBN #: 9780135136904

I. Workbook(s) and/or Lab Manual: None; Class Handouts will be distributed

J. Course Description: This course will be based on learning today's Fluid Control Concepts that are important in die construction in the manufacturing area. In addition to system design and layout, the student will gain experience through labs using construction and operating systems. (TAG # OET009)

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	**Assessments – How it is met & When it is met**
1. Explain forces on plane and curved boundaries.*	This material is covered in the first 3 Chapters, utilizing math, physical properties, and applications of fluid power. Week 1 homework, midterm and final.
2. Define piping systems and the dynamics of pipe flow.*	This material is covered in Chapters 3 and 4, concentrating on energy and power in hydraulic systems and frictional losses in piping. It is also covered in multiple lab exercises using hydraulic trainers. Week 3 homework, midterm and final.
3. Design piping systems involving friction, systems with laminar and turbulent flow.*	Different flows are covered in Chapter 4, introducing Reynolds number plus losses in valves and fittings. Hydraulic circuits are analyzed both in the classroom and in the lab. Weekly homework, labs, midterm and final.
4. Understand the difference between absolute and gage pressures.*	Pressures are covered in almost every chapter, from the basics in Chapter 2 (abs and gage) as well as in other chapters and lab exercises when analyzing hydraulic circuits. Weekly homework, midterm and final.
5. Understand the principles of hydraulic power transmission.*	Hydraulic power transmission is covered in Chapters 3 through 10 and during lab exercises using hydraulic trainers. Week 5 homework, midterm and final.
6. Understand Pascal's Law.*	Material is covered in Chapter 3 and in lab exercises with hydraulic trainers. Weekly homework, midterm and final.
7. Understand Bernoulli's Equation.*	Material is covered in Chapter 3 specifically, and used in Chapter 4 while being exposed to frictional losses in hydraulic circuits. Week 5 homework, midterm and final.
8. Understand the properties of fluids.*	Viscosity, density and bulk modulus are covered in Chapter 2 and during lab exercises comparing viscosities at various temperatures. Weekly homework, midterm and final.

M. Topical Timeline (Subject to Change):

Wk 1 & 2	Basic principles of fluid mechanics
Wk 3 & 4	Frictional losses in a system
Wk 5 - 7	Energy in a hydraulic system
Wk 8 & 9	Pumps
Wk 10 & 11	Motors
Wk 12	Cylinders
Wk 13	Valves
Wk 14 & 15	Basics of pneumatics

N. Course Assignments:

Graded assignments:
1. Written assignments
2. Lab exercises
3. Midterm
4. Final Exam

O. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

P. Grading and Testing Guidelines:

Click here to enter text.

Q. Examination Policy:

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R. Class Attendance and Homework Make-Up Policy:

Click here to enter text.

S. Classroom Expectations:

Click here to enter text.

T. C College Procedures/Policies:

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://sharept.ncstatecollege.edu/committees/1/curriculum/SiteAssets/SitePages/Home/SYLLABUS%20SUPPLEMENT.pdf

The information can also be found Choose an item.