The University of Jordan
School of Engineering
Department of Mechatronics Engineering
1st Semester – A.Y. 2019/2020

Course: Fluid Power Engineering – 0908463 (3 Cr. – Core Course)
Lecture Time (Mon, Wed: 11:00 – 12:30)

Instructor: Dr. Mohammad Mashagbeh
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Office Hours: (Sun, Tue: 10.00-11.00 am)

Course Website: http://elearning.ju.edu.jo

Catalog Data: The course provides students with an understanding of the theories and concepts used in the analysis of hydraulic and pneumatic fluid power systems and the skills needed to design those systems at a competitive level of efficiency, safety and environmental footprint.

Prerequisites by Course:
- Thermal and Fluid Sciences – 0904248

Prerequisites By Topic: The students should have the basic knowledge of fluid mechanics and understanding of mechanical and fluid systems.

Textbook:
- Fluid Power with Applications by Anthony Esposito 7th ed. Pearson.

References:
- Fluid Power Theory and Applications by James Sullivan, Prentice Hall

Schedule & Duration: 14 Weeks, 28 lectures (75 minutes each), plus exams.

Minimum Student Material: Textbook, class handouts, scientific calculator, and an access to a personal computer.

Minimum College Facilities: Classroom with whiteboard and projection display facilities.

Course Objectives: The course develops the conceptual design framework for selecting and specifying fluid components used in the design of hydraulic and pneumatic fluid power systems. The course also presents the methods of analyzing these systems for the purpose of calculating power consumption and effeciency.

Course Learning Outcomes:

Upon successful completion of this course, a student should:

- Recognize the advantages and limitations of fluid power transmission, and the applications suitable for this form of power transmission.
- Identify the basic components of fluid power transmission systems, their operational principles and performance characteristics.
- Design and construct fluid power circuits to satisfy certain functions, taking into consideration the aspects of efficiency, economy, safety and noise.
- Select fluid power circuit components and size them to satisfy given operational, safety and reliability constraints.
- Analyze fluid power transmission circuits, and to predict their performance, efficiency and safety .

ABET SO:

2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

Course Topics:

Topic Description

1. Introduction to fluid power systems
2. Physical properties of hydraulic fluids
3. Energy and power in hydraulic systems
4. Frictional losses in hydraulic pipelines
5. Hydraulic pumps
6. Hydraulic cylinders and cushioning devices
7. Hydraulic valves
8. Hydraulic and pneumatic circuit design.

Ground Rules:

- **Attendance:**
  Attendance is required and strictly enforced. To that end, attendance will be taken every lecture; Absence of more than 5 lectures will result in the expulsion of the student from the course.
- **Make up Examinations**

There will be no make up exams for any exam that will be taken during the course. exceptions to this rule is restricted only to the following cases:-

1. death of only first order relatives (father, mother, sister, or brother).
2. hospital entry (in-patient) during thr time of the examination.

Any other cases will be given zero mark in the corresponding exam.

- **Special Notes**
  1. Seating plan will be as given in the attendance sheet.

Student Questions:

piazza.com/ju.edu.jo/fall2019/0908463/home

Assessments:

Exams, Quizes, and Assignments.

Grading Structure:

Quizzes (online, in class)	**10%**
Participation	**10 %**
Written Midterm Exam	**30 %**
Written Final Exam	**50 %**
Total	**100%**

Last updated: Sep 2019