

**The University of Jordan
School of Engineering
Department of Mechatronics Engineering
1st Semester 2019-2020**



Course: Fluid Power Engineering Lab 0908464 (1 Cr.)
Instructor: Eng. Rasha Noufal
Office: Mechatronics Engineering Department, GN Floor
Office Hours: Su 9:00-10:00AM, Tu 9:00-10:00AM, Th 9:00-10:00AM.
Email: fluid.power.engineering.lab@gmail.com
<https://elearning.ju.edu.jo/>

Course Website:
Catalog Data:

1 Credit hours. The course aims to provide students with a solid understanding of the principles, and concepts used in the analysis of hydraulic and pneumatic fluid power systems and the skills needed to design control and operation of those systems with competitive levels of efficiency, safety and environmental footprint.

Learn how to analyze fluid power components and circuits, and how to design and simulate fluid power circuits for applications. In this course, you will be introduced to the fluid power components, circuits, and systems. You will learn the symbols of common hydraulic components; and how to design and predict the performance of fluid power circuits.

Prerequisites by Course: Thermal and Fluid Sciences (0904248)
 Fluid Power Engineering (0908463)
Textbook : Fluid Power Engineering Lab Handout

References: • Notes and slides on the ELearning JU webspace.

Schedule & Duration: 14 Weeks, 12 Labs (180 minutes each) plus exams.

Instructional Methods
 1. Pre-lab
 2. Conducting experiemtns (Lab Work)
Minimum Student Material: Lab Handouts , and an access to Personal Computer with FluidSim/Automation Studio

Minimum College Facilities: Lab with whiteboard and projection display facilities, and computational facilities with FluidSim/Automation Studio.

Course Outcomes:

1. Identify the basic components of fluid power systems, their operational principles and performance characteristic's .
2. Design and construct fluid power circuits to satisfy certain functions, taking into consideration the aspects of efficiency, economy, safety and noise [2].
3. Select fluid power circuit components to satisfy given operational, safety and reliability constraints .
4. Analyze fluid power 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
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Course Topics:

Topic Description

1. Experiment 1 : Introduction to FluidSIM/ Automation Studio Program
2. Experiment 2 : Pneumatic Control of a Double-acting Cylinder
3. Experiment 3 : Electro pneumatics Control Technology
4. Experiment 4 : Introduction to Hydraulic Trainer
5. Experiment 5 : Sequential control of a 2 double acting cylinder
6. Experiment 6 : Electro pneumatics Sequential control of a 2 double acting cylinder
7. Experiment 7 : Regenerative and Parallel Circuits
8. Experiment 8 : Pneumatic sequential control of a 3 double acting cylinder
9. Experiment 9 : Electro pneumatic sequential control of a 3 double acting cylinder
10. Experiment 10: Hydraulic Motor Circuit

- **Attendance:**

Students are expected to attend EVERY CLASS SESSION and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.

- **Make up Examinations**

There will be no makeup 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 the zero mark in the corresponding exam.

- **Special Notes**

1. Seating plan will be as given in the attendance sheet.
2. Students creativity is welcomed and will receive additional marks

Ground Rules:

Assessments:

Pre Lab, In Lab work , (computerized / practical) exam, and final exam

Grading policy:

Pre Lab	10%
In Lab Work	20%
Midterm Exam	20%
Computerized Exam / Practical Exam	20%
Final Exam	30%
<u>Total</u>	100 %

Last Updated: Sep. 2019