



Philadelphia University

Faculty of Engineering - Department of Renewable Energy
Engineering
Second Semester 2016/2017

Course Information

- Title:** Hydraulic and wave energy (611543)
- Prerequisite:** Fluid mechanics (620320)
- Credit Hours:** 3 credit hours (16 weeks per semester, approximately 44 contact hours)
- Textbook:** Bioenergy Systems, Biological Sources and Environmental Impact, by Michel C. Allard
- References:** Handbook of Ocean Wave Energy (Ocean Engineering & Oceanography) 1st ed. 2017 Edition, by Arthur Pecher, Jens Peter Kofoed.
- Catalog Description:** Fluids and Fluid flow, Hydraulic and air system implementations, Installation and modeling of principles of performance, function and applications of hydraulic and air component, Valves, cylinders and pumps, linear and circular motion control circuits, design principles and implementation in hydraulic and air systems. Systems and devices of hydraulic energy generation, the transfer and control of energy, drawing and installation, Circuit and hydraulic systems, Performance improvements for the systems in Industrial processes
- Website:** <http://www.philadelphia.edu.jo/academics/wagahfm/> Dr Wagah Al-Azzawi
- Email:** wagah2000@yahoo.co.uk.
- Instructor:** **Office:** Engineering building, room 6728, ext: 2180.
Office hours: Sun, Tues, Thurs: 11:10-13:10 and Mon, Wed: 10:00 -12:00

Course Topics

Week	Topic
1&2	Fluids and Fluid flow
3,4, 5	Hydraulic and air system implementations
6, 7	Installation and modeling of principles of performance
8,9	function and applications of hydraulic and air component, Valves, cylinders and pumps,
10	linear and circular motion control circuits
11,12,	Design principles and implementation in hydraulic and air systems.
13	Systems and devices of hydraulic energy generation
14	The transfer and control of energy, drawing and installation
15	Performance improvements for the systems in Industrial processes
16	Review, and final exam

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1.	Understand Fluids and Fluid flow	[a, h]
2.	Deals with Hydraulic and air system implementations	[a, h]
3.	Use, Installation and modeling of principles of performance	[c, h]
4.	Be able to design principles and implementation in hydraulic and air systems.	[c, h]
5.	Illustrates functions and applications of hydraulic and air component, Valves, cylinders and pumps,	[e, h]
6.	Understand Performance improvements for the systems in Industrial processes.	[a, c]

Assessment Instruments:

Evaluation of students' performance (final grade) will be based on the following categories:

Exams: Two written exams will be given. Each will cover about 3-weeks of lectures

Quizzes: 10-minute quizzes will be given to the students during the semester. These quizzes will cover material discussed during the previous lecture(s).

Homework: Problem sets will be given to students. Homework should be solved individually and submitted before the due date.

Copying homework is forbidden, any student caught copying the homework or any part of the homework will receive zero mark for that homework

Participation: Questions will be asked during lecture and the student is assessed based on his/her response

Final Exam: The final exam will cover all the class material.

Grading policy:

First Exam	20%
Second Exam	20%
Homeworks	5%
Quizzes	15%
Final Exam	40%
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Total:	100%

Attendance policy:

Absence from classes and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse, acceptable to and approved by the Dean of the relevant college/faculty, shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.