Philadelphia University
Faculty of Engineering, Department of Mechatronics Engineering
Course Syllabus, First Semester, 2019/2020

Course Title: Mechanics and Vibrations Lab (0640337), Third year.

Prerequisite: Dynamics and Vibrations (0640233).

Credit Hours: 1 credit hours (16 weeks per semester, approximately 44 contact hours).

Class Time: Section 1, Tues (13:10-16:00).

Text Book: Mechanics and Vibrations Lab Manual

Course description: Mechanics is a broad field where the behaviors of different bodies are studies both at rest and in motion. Mechanics include a wide spectrum of various specific topics such as: statics, dynamics, vibrations, fluid mechanics, mechanics of materials. This lab is concerned with the investigation of different topics and concepts in the field of mechanics, in general, and specially in vibrations.

Website: http://www.philadelphia.edu.jo/academics/waraydah/page.php?id=3

Instructor: **Name: Eng. Walaa S. Araydah**
Email: waraydah@philadelphia.edu.jo
Office: Engineering building, Mechatronics Department, room 6412, ext: 2591.
Office hours: Sun, Tues, Thurs: 11:15-1:15

Lab Experiments:

Week	Experiment Name
1	General Introduction to the Lab
2	Introduction to Vibrations (1): Spring-Mass System
3	Introduction to Vibrations (2): Pendulum System
4	Simulation of Vibrations (1): Free Undamped and Free Damped Systems
5	Simulation of Vibrations (2): Harmonics and Base Excitations
6	Static and Dynamic Balancing
7	Introduction to signal processing
8	Shaft Balancing and Diagnosis of Bearings Faults
9	Flow Measurements
10	Impact of a Water Jet
11	Center of Pressure

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand the principles of vibrations.	[a, b]
2.	Use MATLAB Simscap to simulate different mechanical systems.	[a, k]
3.	Understand the difference between static and dynamic balancing.	[a, b]
4.	Understand the main concepts of fluid mechanics.	[a, b, k]
5.	Conduct an experiment and write a full report to discuss the results.	[b, g]

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Reports: The students will be asked to write and submit a report after each lab experiment.

Quizzes: 3-quizzes of 10-minutes will be conducted during the semester.

Final Exam: The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading policy:

First Exam	"Quizzes (5%), reports (15%) " 20%
Second Exam	"Quizzes (5%), reports (15%) " 20%
Third Exam	"Quizzes (5%), reports (10%) and performances (5%)" 20%
Final Exam	"Practical 30% and Theoretical 10%" 40%
Total:	100%

Attendance policy:

The semester has in total 33 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course.

October, 2019