



## Course Details:

**Course Title:** Mechatronics Systems Design Lab (0640544), Fifth year.  
**Prerequisite:** Mechatronics Systems Design (0640447)  
**Corequisite:** Mechatronics Systems Design (0640447)  
**Credit Hours:** 1 credit hours (16 weeks per semester, approximately 44 contact hours)

**Textbook:** Laboratory notes and manual

**References:** 1. Earl Gates, Leo Chartrand, " Introduction to Electronics ", 5th Edition, 2010.

2. Seyedreza Fattahzadeh , "Programming with SIEMENS SIMATIC S7 300/400 programmable controllers", 9th Edition, 2013.

**Course Description:**

1. Learn about the Mechatronics system design.
2. To introduce the principle of switching using electromechanical and electrical components.
3. To introduce in PLC programming using SIEMENS SIMATIC S7 300/400 programmable controllers.

**Website:** <http://www.philadelphia.edu.jo/academics/ssalah/page.php?id=3>

**Instructor:** **Name: Eng. Samer Z. Sartawi**  
**Email:** ssalah@philadelphia.edu.jo  
**Office:** Engineering building, Mechatronics Department, room 6411, ext: 2346.

## Lab Experiments:

Week	Experiment Name
1 <sup>st</sup> week	General Introduction to the Lab
2 <sup>nd</sup> week	Principles of Switching
3 <sup>rd</sup> week	DC Motor Control (Direction and Speed)
4 <sup>th</sup> week	Introduction to PLC and Ladder Logic Programming
5 <sup>th</sup> week	Ladder Logic Programming 2
6 <sup>th</sup> week	FESTO MPS Distribution System
7 <sup>th</sup> week	FESTO MPS Sorting System
8 <sup>th</sup> week	Overhead Crane System
9 <sup>th</sup> week	Generating Acceleration Using Digital Output
10 <sup>th</sup> week	Analog Input and Analog Output Using PLC

## Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand the electromechanical and electronics components Characteristics and how to use it in switching.	[1]
2.	Ability to implement PLC controller in different systems.	[6]

### Assessment Guidance:

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

**Quizzes:** (3) quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.

**Reports:** 8 reports.

**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 (00%)	Reports (00%)	Total 00%
Second Exam	Quizzes (10%)	Reports (20%)	Total 30%
Third Exam	Quizzes (20%)	Reports (10%)	Total 30%
Final Exam	Practical (30%)	Theoretical (10%)	Total 40%
	Total		100%

### Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes 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. If the excuse is approved by the deanship the student will be considered withdrawn from the course.