



# Philadelphia University

Faculty of Engineering – Mechatronics Engineering Department  
Second Semester 2017/2018

## Course Details:

- Title:** Programmable Logic Controllers (640445)
- Prerequisite:** Microcontrollers (640328)
- Credit Hours:** 3 credit hours (16 weeks per semester, approximately 45 contact hours)
- Textbook:** “Programmable Logic Controllers” By Frank D. Petruzella, McGraw-Hill Education, 5<sup>th</sup> edition 2010.
- References:**
- “Programmable Logic Controllers “ by James A. Rehg and Glenn J. Sartori.
  - “Programmable Logic Controllers” by w. Bolton, 3rd Edition.
- Description:** This course provides the students with the needed material for understanding, analyzing, programming, and designing PLC-based systems.
- Website:** <http://www.philadelphia.edu.jo/academics/inaimi>
- Instructor:** Dr. Ibrahim Al-Naimi
- Email:** [inaimi@philadelphia.edu.jo](mailto:inaimi@philadelphia.edu.jo)
- Office:** Engineering building, room 6408, ext: 2370
- Office hours:** Sunday, Tuesday, and Thursday: 10:10-11:00 and 12:10-1:00

## Course Outlines:

Week	Topic
(1)	Traditional controller
(2)	Introduction to PLC
(3, 4)	PLC hardware construction and components
(5)	PLC logic fundamentals and principle of operation
(6, 7)	PLC programming languages
(8, 9)	Program control Instructions
(10, 11)	Timer/counter instructions
(12)	Data manipulation and math instructions
(13)	Sequence and Shift register Instructions
(14)	SFC programming language
(15)	PLC and process control applications
(16)	PLC troubleshooting

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

Upon successful completion of this course, student should:

1.	Understand the hardware construction and components for programmable logic controllers.	[a, e]
2.	Understand the fundamentals and principle of operation for programmable logic controllers.	[a, c]
3.	Install, operate, and program different types of programmable logic controllers for different mechatronics and industrial applications.	[a, b, c, e, k]

### **Assessment Guidance:**

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

**Sub-Exams:** The students will be subjected to two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.

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

**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	20%
Second Exam	20%
Quizzes	20%
Final Exam	40%
Total:	100%

### **Attendance Regulation:**

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

February, 2018