



Syllabus

1. Course name: Programmable Logic Controller

2. Course code: PLCS330846

3. Credits: 3 credits (3:0:6) (3 lecture periods, 0 lab period, 6 self-study periods per week)

4. Instructors

- a. Chief lecturer: Assoc. Prof. Dr. Truong Dinh Nhon
- b. Co-lecturers: Dr. Tran Vi Do
- c. Co-lecturers: MEng. Senior Lecturer. Nguyen Tan Doi
- d. Co-lecturers: Dr. Ta Van Phuong
- e. Co-lecturers: MEng. Nguyen Tu Duc

5. Course Requirements:

Prerequisite course(s): None

Previous course(s): Electrical Machines; Digital Systems

6. Course Description

The course on Programmable Logic Controller provides learners knowledge related to sensors, actuators, hardware architecture and programmable logic controller (PLC) operation. In addition, the course also introduces programming languages along with PLC instruction and control diagram design methods. Finally, students are equipped with practical skills and knowledge to design hardware and programming industrial control systems.

7. Learning Outcomes (CLOs)

CLOs	Descriptions	ELO(s) /PI(s)	Compe- tency
	<i>On successful completion of this course students will be able to:</i>		
CLO1	Ability to explain the structure, select the communication method for the operation of a PLC	ELO1/PI1.1	M
CLO2	Ability to use PLC programming software for system control	ELO2/PI2.1	M
CLO3	Ability to understand, interpret English documents, perform exercises in English related to the system using PLC	ELO5/PI5.2	M
CLO4	Ability to apply hardware design, design control program for automation systems in biomedical field	ELO4/PI4.2	R

8. Content outline

- *An overview of the PLC programmable controller: input and output circuits, memory structure, operating principles and PLC applications in industry.*
- *Operating principles and how to choose peripheral devices such as sensors and actuators in automation systems.*
- *Design control flowcharts for automation systems; Write a PLC program based on the flowchart.*
- *Basic instructions for PLC programming, apply these basic instructions to write actual system control programs.*
- *Analog signal processing, application functions for reading and outputting analog signals in PLC.*

- *High-speed counter (HSC) and pulse width modulation (PWM) in PLC and practical application.*

9. Teaching Methods

- *Powerpoint presentation*
- *Teamwork*

10. Assessment(s)

- Grading scale: **10**
- Assessment plan:

No.	Content	CLOs	Competency	Assessment methods	Assessment tools	Weighting %
Formative assessment						50
1.	Apply knowledge to analyze, draw PLC and peripheral device wiring diagram, select PLC communication method with peripheral device in a system	CLO1/ PI1.1	M	Assignments	Questions	20
2.	PLC programming for controlling a system using basic instructions	CLO2/ PI2.1	M	Assignments	Questions	20
3.	Participate in lessons	CLO3/ PI5.2	M	Quizes	Rubric	10
Summative assessment						50
4.	Explain, calculate, design control program using PLC in a system	CLO4/ PI4.2	R	Assignments	Questions	50

11. Learning Materials:

- Textbook(s):
[1] Ngo Van Thuyen, Truong Dinh Nhon; *Giáo trình Điều khiển lập trình*, Ho Chi Minh City National University Publishing, University of Technology and Education, Ho Chi Minh City, 2015.
- References:
[2] Hugh Jack, *Automation Manufacturing Systems with PLCs*, April 14 2005.

12. General Information:

Academic Integrity

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13. Approval Date: <dd/mm/yyyy>

14. Endorsement:

Dean	Head of Department	Chief Lecturer
Assoc. Prof. Dr. Nguyen Minh Tam	Assoc. Prof. Dr. Nguyen Thanh Hai	<i><Full Name></i>

15. Revision History:

1st Revision: <i><dd/mm/yyyy></i>	Lecturer: Head of Department: Assoc. Prof. Dr. Nguyen Thanh Hai
2nd Revision: <i><dd/mm/yyyy></i>	Lecturer: Head of Department: