Óbuda University Bánki Donát Faculty of Mechanical and Safety Engineering	Insitute of Mechatronics and Vehicle Engineering

Subject title and code: **PLC knowledges, BMXPLE5BNE** **Credits:** *4*

Full-time study 3 *ac. year* 1 *semester*

The course is available at: mechatronical engineering

Supervised by: István Nagy **Instructors:** István Nagy

Prerequisite (neptun code): Electrical Engineering

Weekly number of lessons

Lecture: 1	Group seminar: 0	Lab: 2	Consultation: see, consul-tation's time

Way of assessment: Exam (Written)

Online consultation *(in case it's required):* *... (BBB link)*

Educational goal: *The aim of education is to give the students general information about PLC structure, operation and PLC programming. In the exercises the students will program through a Mitsubishi –FX trainer simulation's model, and TIA portal.*

Schedule

Education week	Topics
1.	**Lecture:** PLC main components and generations **Exercise:** *See, LAB-1 module in Moodle; Introduction to IEC symbols;*
2.	**Exercise:** *Introduction to FX trainer*
3.	PLC processors- structures, bit/byte/modular, organized PLCs; Counters/timers/merkers : HW ad SW realizations; **Exercise:** *See, LAB-2 module in Moodle**;** FX trainer, basic programming*
4.	**Exercise:** *FX trainer, set/reset programming*
5.	PLC I/O modules; PLC OS structure and basic SW components (modules) of op. system; **Exercise:** *FX trainer, counters/timers programming*
6.	**Exercise:** *FX trainer, Evaluated Tests - programming*
7.	PLC programming standards and programming languages: IL, FBD, SFC, LD, GraphCet. **Exercise:** *Introduction to TIA*
8.	**Exercise:** *Introduction to TIA, basic SETUP*
9.	PLC communications: networks, BUS systems, access modes, master-slave connections (CSMA/CD/CA) **Exercise:** *TIA Basic Programs – Selecting Machine Introduction*
10.	**Wednesday, 12:35-TDK–Rect. Holiday.**
11.	**Rector's Holiday**
12.	**Exercise:** *Real Technology Programming*
13.	**Lecture: PLC- Theory – Test Paper** **Exercise:** *SFC-programming*
14.	**Lecture:** Retake PLC-Theory **Exercise:** *Evaluated program writing*

Mid-semester requirements

Test		Assignment to be submitted		Lab measurement	
amount	dates	amount	deadlines	amount	dates
1	13th week				

According to the Study and Examination regulations of Óbuda University attendance of group seminars and lab exercises are mandatory.

Other requirements for participation in sessions not covered by the regulations and restrictions on substitutions:
The lectures are mandatory, max. 30% absence is allowed.

Test		Assignment to be submitted		Lab measurement	
maximum points available	minimum score required to pass /test	maximum points available	minimum score required to pass / assignment	maximum points available	minimum score required to pass /lab
100/TPpoints	50points	points	…points	100/Progpoints	50/progpoints

Total number of points achievable in semester: …points				
Grading thresholds	**satisfactory** 50-65% % and above	**average** 66-79% % and above	**good** 80-89% % and above	**excellent** >90 % % and above
Other evaluation criteria: if the **TOTAL** (practice+theory) average of evaluation is over 60% the **recommended mark** is offered.				
Receive a signature denied entry: _over max. absence,				
Required references: *http: siva.banki.hu\jegyzetek\mechatronikai_alapismeretek\English_Mechatr\PLC_Control*				
Recommended references: see, moddle				
Quality assurance methods of the subject:				

Things, that are not included, can be found within the regulations of Óbuda University.