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

Subject title and code: **Programmable Control Circuits, BMWPVE6BNE** **Credits:** *2*

Full-time study 2023/24 *ac.* 2 *semester year*

The course is available at: mechatronical engineering

Supervised by: Dr. Nagy András **Instructors:** Dr. Nagy András

Prerequisite (neptun code): Digital Technics

Weekly number of lessons

Lecture: 2	Group seminar: 0	Lab: 2	Consultation: 1

Way of assessment: Exam (Written)

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

Edu. goal: *The goal is to introduce students to programmable control circuits..*

Schedule

Education week	**Topics**
1.	Introduction to digital circuits
2.	Basics of PLDs, classifications
3.	Introduction to PALs
4.	Programming PLS-100
5.	Controlling 7segment display and driving circuit
6.	Programming logical functions using PLD
7.	Mid-term exam
8.	Introduction to CPLD and FPGA
9.	Internal structure of main FPGA types
10.	Basics of programming FPGAs
11.	Application examples of FPGAs
12.	Student's presentations
13.	Student's presentations
14.	Retake of mid-term exam, evaluating essays

Mid-semester requirements

Test		Assignment to be submitted		Lab measurement	
amount	dates	amount	deadlines	amount	dates
1	7th week	1	12th week		

According to the HKR attendance of group seminars and lab exercises are mandatory.

Other requirements for participation in sessions not covered by the regulations and restrictions on substitutions:

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
100points	50points	100points	60points	points	points

Total number of points achievable in semester: 200points				
Grading thresholds	**satisfactory** 110 points and above	**average** 132 points and above	**good** 154 points and above	**excellent** 176 points and above

Other evaluation criteria:	
Receive a signature denied entry:	During the semester, students write a midterm test for which they receive a grade. The student who writes a midterm test with at least a sufficient grade will receive a signature from the subject. If the student writes the test as insufficient and does not correct it, the student must be banned from the course. During the semester, students write an essay also about the application of programmable control circiuts, mainly FPGAs, for which they receive a grade. It must be at least satisfactory.
Required references:	Lecture presentations uploaded to Moodle
Recommended references:	Cem Unsalan, Bora Tar: Digital System Design with FPGA: Implementation Using Verilog and VHDL, ISBN: 978-1259837906
Quality assurance methods of the subject:	

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