COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Electrical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="6">Electrical and Electronics Engineering</td><td>Degree level and programme type</td><td>bachelor's degree, full time programme</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6">-</td><td>Study profile</td><td>-</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Workshop on Programmable Logic Device</td><td>Course code</td><td>IS-FEE-10038S</td></tr>
<tr><td>Course type</td><td>elective</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>summer</td></tr>
<tr><td></td><td></td><td></td><td></td><td>30</td><td></td><td></td><td>No. of ECTS credits</td><td>4</td></tr>
<tr><td>Entry requirements</td><td colspan="9">-</td></tr>
<tr><td>Course objectives</td><td colspan="9">Use of programmable logic device in real life example. Preparation of technical documentation, tools description and programming methods. Use of hardware description language to synthesise logic device controlling assigned plant. Oral presentation with discussion on individual project.</td></tr>
<tr><td>Course content</td><td colspan="9">Programmable logic device (PLD) especially field programmed gate array (FPGA) characterisation. Introduction to selected computer-aided design (CAD) tool and hardware description language (HDL). Programming and testing of logic devices based on standard and self-prepared libraries. Automatic control of selected peripheral device. Synthesis of real life example of logic devise based on FPGA modul.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">project/specialization workshop.</td></tr>
<tr><td>Assessment method</td><td colspan="9">projects completion, presentation and discussion of the projects.</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes
After completing this subject student is able to:</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">characterize programmable logic devices;</td><td colspan="2"></td></tr>
<tr><td>LO2</td><td colspan="7">gather information from technical documentation;</td><td colspan="2"></td></tr>
<tr><td>LO3</td><td colspan="7">prepare his own technical documentation;</td><td colspan="2"></td></tr>
<tr><td>LO4</td><td colspan="7">presents problems and solutions concerning assigned project;</td><td colspan="2"></td></tr>
<tr><td>LO5</td><td colspan="7">use necessary programming tools;</td><td colspan="2"></td></tr>
<tr><td>LO6</td><td colspan="7">use selected hardware description language;</td><td colspan="2"></td></tr>
<tr><td>LO7</td><td colspan="7">identify time and funds necessary for project realization;</td><td colspan="2"></td></tr>
<tr><td>LO8</td><td colspan="7">work well individually and in a group.</td><td colspan="2"></td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Methods of assessing the learning outcomes</td><td colspan="2">Type of tuition during which the outcome is assessed</td></tr>
<tr><td>LO1</td><td colspan="7">project documentation and oral presentation;</td><td colspan="2"></td></tr>
<tr><td>LO2</td><td colspan="7">project documentation;</td><td colspan="2"></td></tr>
</table>

LO3	initial project documentation;		
LO4	oral presentation;		
LO5	project documentation;		
LO6	project documentation;		
LO7	project documentation;		
LO8	discussion of the student's projects, evaluation of the student's performance in classes		
Student workload (in hours)		No. of hours	
Calculation	participation in classes	30	
	preparation for classes	15	
	work on projects	60	
	participation in student-teacher sessions related to the class	1	
	preparation for and participation in project presentations	6	
	TOTAL:	112	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		30	1
Student workload – practical activities		112	4
Basic references	1. Deschamps J. P.: Synthesis of arithmetic circuits FPGA, ASIC and embedded systems. J. Wiley, 2006. 2. Chu P. P.: FPGA prototyping by VHDL examples: Xiling Spartan-3 version. J. Wiley, 2008. 3. http://www.altera.com/literature/lit-index.html		
Supplementary references	1. http://www.fpga4fun.com/		
Organisational unit conducting the course	Department of Automatic Control and Robotics	Date of issuing the programme	
Author of the programme	Łukasz Sajewski, Ph.D. Eng.	08.02.2020	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

S – seminar