Computing – 4 semester

Lp.	Subject	Description	Semester	ECTS credits	Number of hours for the form of education						Form of passing	
					Lecture	Exercise	Practical classes	ZK	PS	PZ	Exam	Credit
1.	Operational research	Students become familiar with the theory and basic methods of operations research. They will acquire the skills to correctly classify and formulate selected, real decisionmaking (optimization) problems and task scheduling problems.They will be able to choose a method or an appropriate algorithm to solve the formulated problem.	4	**4**	30	-	30				x	x
2.	Optimization methods	Students become familiar with advanced optimization problems and methods. They will be able to choose a method or an appropriate algorithm to solve the formulated problem.	4	**4**	30	-	30				x	x
3.	Engineering and scientific calculations	Providing students with basic knowledge of IT tools used for calculations in science and in engineering. Developing students' skills in defining and solving simple technical computational problems.	4	**3**	15	-	30				-	x

4.	Computer simulation	Providing students with basic knowledge in the field of modeling and simulation of continuous, discrete and discrete-continuous processes. Developing students' skills	4	**3**	15	-	30				-	x
		in planning and automatic implementation of simple simulation experiments.											
5.	Basics of automation	Providing students with basic knowledge in the description of the dynamics of objects in the time, operator and frequency domain. Developing students' skills in solving simple problems of identifying objects and designing systems control.	4	**3**	15	15	30				-	x
6.	Web applications I	Familiarization with the basics of hypertext markup language. Using basic HTML elements. Applying a CSS stylesheet.	4	**3**	15	30	15				-	x
7.	Software Engineering I	Learning the principles and methods of software development in a systematic way. The student acquires the skills of: using design patterns; software design in accordance with structured methodology. Reviewing the software design.	4	**3**	30	-	30				-	x

8.	Database systems I	Familiarizing students with modern database technologies, presenting practical and theoretical aspects of database systems. Development of skills: modeling of IT systems; preparing a relational database schema for based on the entityrelationship model. Practical learning of SQL (Structured Query Language), formulating queries in SQL - creating transactions.	4	**3**	30	-	15				x	x
9.	Operating systems II	Familiarization with aspects of process synchronization. Presentation of aspects of system and concurrent programming in the POSIX standard on the example of a Linux operating system. Discussion of the security aspects of the operating system and the specificity of OS used in IoT.	4	**3**	30	-	30				x	x
	Total:			**29 ECTS**								