

Bialystok University of Technology									
Field of study	Computer Science							Degree level and programme type	Engineer's degree full-time programme
Specialization/ diploma path	---							Study profile	academic
Course name	Internet of Things							Course code	FCS-00095
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	3
	15		30					No. of ECTS credits	6
Entry requirements									
Course objectives	The aim of the course is to introduce students to the issues of the "Internet of Things" - the Internet of Things. Students will learn and use the possibilities of IoT, applied systems, standards, and everything will be tested in real conditions.								
Course content	<p>Lecture: The concept of the "Internet of Things". IoT platforms and environments used. Standards. Testing and self-testing. Wired interfaces. Wireless interfaces. Low power design.</p> <p>Laboratory: IoT platforms. Development environments. Preparation for operation and first start-up. Basic testing and self-testing. Communication with peripheral devices. Remote communication. Practical use of methods of reducing energy consumption. Design and implementation of an IoT system.</p> <p>Translated with <a href="http://www.DeepL.com/Translator">www.DeepL.com/Translator</a> (free version)</p>								
Teaching methods	informative lecture, lecture problem, programming, demonstration, laboratory exercises, project method, simulation,								
Assessment method	Lecture - written assessment. Laboratory - evaluation of reports and evaluation of the final project.								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	knows and understands the key issues of the Internet of Things and its applications								
LO2	knows and can use IoT design platforms, environments and standards								
LO3	knows, uses and appropriately selects communication interfaces								
LO4	takes into account the need to reduce energy consumption during design and programming								
Symbol of learning outcome	Methods of assessing the learning outcomes							Type of tuition during which the outcome is assessed	
LO1	written test							L, Lab	
LO2	written test, reports evaluation, final project evaluation							L, Lab	
LO3	reports evaluation, final project evaluation							Lab	
LO4	reports evaluation, final project evaluation							Lab	
Student workload (in hours)							No. of hours		
Calculation	1 - Attendance at lectures - 15x1h							15	
	2 - Attendance at classes - 15x2h							30	
	3 - Participation in student-teacher sessions -							5	
	4 - Preparation for laboratories and preparation of reports -							65	
	5 - Preparation for the test -							5	
	6 - Final project preparation -							30	
<b>TOTAL:</b>							<b>150</b>		
Quantitative indicators							HOURS	No. of ECTS credits	
Student workload - activities that require direct teacher participation							50 (1)+(2)+(3)	2.0	
Student workload - practical activities							125 (2)+(4)+(6)	5.0	
Basic references	<ol style="list-style-type: none"> <li>Serpanos, Dimitrios, and Marilyn Wolf. Internet-of-Things (IoT) Systems. Cham: Springer International.</li> <li>McRoberts, Michael. Beginning Arduino. Berkeley, CA: Apress L. P, 2013. Technology in Action.</li> <li>Strickland, James R. Raspberry Pi for Arduino Users. Berkeley, CA: Apress L. P, 2018.</li> <li>Gay, Warren. Beginning STM32. Berkeley, CA: Apress L. P, 2018.</li> <li>Standards and norms indicated by the instructor.</li> </ol>								
Supplementary references	<ol style="list-style-type: none"> <li>Webpage of Raspberry Pi project: <a href="https://www.raspberrypi.org/">https://www.raspberrypi.org/</a></li> <li>Webpage of Arduino project: <a href="https://www.arduino.cc/">https://www.arduino.cc/</a></li> <li>Webpage of ESP32 device development: <a href="https://www.espressif.com/en/products/socs/esp32/overview">https://www.espressif.com/en/products/socs/esp32/overview</a></li> <li>ST company webpages (STM32 series): <a href="https://www.st.com/en/microcontrollers-microprocessors/stm32-32-bit-arm-cortex-mcus.html">https://www.st.com/en/microcontrollers-microprocessors/stm32-32-bit-arm-cortex-mcus.html</a></li> </ol>								
Organisational unit conducting the course	Department of Information Systems and Computer Networks							Date of issuing the programme	
Author of the programme	dr inż. Tomasz Grześ							Feb. 18, 2022	

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