



COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	Technologie IoT	
Course name in English	Internet of Things	
Valid from academic year	2022/23	

PLACEMENT IN THE TEACHING PROGRAM

Field of study	Computer Science
Level of education	1st degree
Studies profile	General
Form and method of teaching classes	Full-time and part-time studies
Specialization	Information and communication technology
Organizational unit responsible for the course	Katedra Systemów Informatycznych
Course coordinator	dr inż. Mirosław Płaza mgr inż. Małgorzata Płaza
Approved by	Dean of the Faculty of Electrical Engineering, Automatic Control and Computer Science Roman Deniziak, KUT prof., DSc, PhD

GENERAL CHARACTERISTIC OF THE COURSE

Course affiliation	Speciality	
Course status	Obligatory	
Language	English	
Semester	full-time studies	Semester V
	part-time-studies	Semester VI
Requirements	Computer networks	
Exam (YES/NO)	NO	
ECTS	2	

Course form		lecture	classes	laboratory	project	other
Hours per semester	full-time studies	15		15		
	part-time-studies	9		9		

LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	Students know and understand the solutions of technologies used in the area of Internet of Things.	INF_W30
	W02	Students know and understand the possibilities of using sensors, controllers and other electronic components used in the field of Internet of Things solutions.	INF_W30
	W03	Students know and understand the solutions of communication protocols and of Cloud and Fog Computing distributed computing systems used in IoT systems	INF_W30
Skills	U01	Students are able to design and build a simple IoT network using simulation tools.	INF_U30
	U02	Students are able to design and build a simple electronic circuit using real microprogrammable circuits.	INF_U30
	U03	Students are able to implement software that provides functionality for IoT systems.	INF_U30
Social competence	K01	Students are able to assess the importance of the IoT technologies and their impact on society.	INF_K1 INF_K2
	K02	Students are prepared to work in a group in the scope covering the creation of IoT solutions.	INF_K1 INF_K2

COURSE CONTENT

Course Form	Content
lecture	<ol style="list-style-type: none"> 1. Internet of Things (IoT) architecture basics. 2. The role of sensors, microcontrollers and other components used in IoT. 3. Microprogrammable platforms in IoT applications. 4. Programming of SBC (Single Board Computer) systems. 5. Distributed computing systems – Cloud Computing, Fog Computing. 6. Possibilities of using IoT technologies in industry, business, smart spaces and social processes. 7. Creation of IoT prototype solutions based on microprogrammable platforms.
laboratory	<ol style="list-style-type: none"> 1. Construction of simple IoT topologies and examination of their functionality in a simulation environment. 2. Construction of real electronic circuits using selected types of microcontrollers. 3. Construction of practical solutions used in IoT technologies using microcomputer platforms. 4. Smart city – research and simulation analysis.

LEARNING RESULTS VERIFICATION METHODS

Result Symbol	Learning results verification methods					
	Oral Exam	Written Exam	Midterm	Project	Report	Other
W01			X			
W02			X			
W03			X			
U01			X			
U02			X			
K01			X			
K02			X			

ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	pass with a grade	Obtaining at least 50% of the points from the pass tests during the laboratory classes.
laboratory	pass with a grade	Obtaining at least 50% of the points from the pass tests during the laboratory classes.

STUDENT'S VOLUME OF WORK

ECTS Balance												
No.	Activity Type	Student Involvement										Unit
		full-time studies					part-time-studies					
		Lec	C	Lab	P	S	Lec	C	Lab	P	S	
1.	Participation in classes according to the schedule	15		15			9		9			h
2.	Other (consultations, exams)	2		2			2		2			h
3.	Total with the direct assist of an academic teacher	34					22					h
4.	Number of ECTS, that students obtains with the direct assist of an academic teacher	1,36					0,88					ECTS
5.	Hours of unassisted student work	16					28					h
6.	Number of ECTS that student obtains working unassisted	0,64					1,12					ECTS
7.	Practical classes volume of work	15					9					h
8.	Number of ECTS obtained by student at practical classes	0,60					0,36					ECTS
9.	Total student's volume of work expressed in hours	50					50					h
10.	ECTS	2										

BIBLIOGRAPHY

1. Cuno Pfister, **Getting started with Internet of Things**, 2011
2. John C. Shovic, **Raspberry Pi IoT Projects**, 2021
3. Materials on the NetAcad platform available for students during laboratory.