



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Data analysis for the Internet of Things

### Course

Field of study

Year/Semester

Computing

2/3

Area of study (specialization)

Profile of study

Mobile and embedded applications for the Internet of Things

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

part-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

16

16

Tutorials

Projects/seminars

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Tomasz Łukaszewski

Responsible for the course/lecturer:

### Prerequisites

The student starting this course should have basic knowledge of Internet technologies, basics of logic and databases, and programming in Python. He should also have the ability to obtain information from the indicated sources and be ready to cooperate as part of the team.

### Course objective

Provide students with knowledge and skills in the field of data analysis using machine learning techniques: classification. Data pre-processing will be emphasized.

### Course-related learning outcomes

Knowledge

1. Has advanced detailed knowledge of data classification and pre-processing
2. Has knowledge of development trends and new achievements in machine learning
3. Knows advanced methods, techniques and tools used to solve complex engineering tasks in the field of computer science related to machine learning



Skills

1. He can plan and carry out experiments in the area of machine learning
2. Can assess the usefulness of machine learning methods and tools in the Internet of Things

Social competences

Understands that in computer science, knowledge and skills very quickly become obsolete.

**Methods for verifying learning outcomes and assessment criteria**

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified with a passing test. Passing threshold: 50% of points. The completion of the questions on the basis of which the questions are developed will be given to the students before the completion of the exam. The skills acquired during the laboratory classes are verified on the basis of tasks related to the analysis of the identified problems

**Programme content**

the lecture program includes: the classifier of the closest neighbors, decision trees, managing the values of unknown features, mapping and scaling the values of features, discovering and selection of features

The laboratory program covers the issues discussed during the lectures: machine learning with the use of Python modules and sample programs

**Teaching methods**

lecture: multimedia presentation

laboratory exercises: practical exercises, discussion, team work

**Bibliography**

Basic

1. Python. Uczenie maszynowe, Wydanie II, Sebastian Raschka, Vahid Mirjalili, Helion 2019

Additional

1. Naczelny algorytm. Jak jego odkrycie zmieni nasz świat. Pedro Domingos. Helion 2016

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	32	1,3
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	43	1,7

<sup>1</sup> delete or add other activities as appropriate