POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Introduction to artificial intelligence

Course

Field of study	Year/Semester
Automatic Control and Robotics	3/5
Area of study (specialization)	Profile of study
	practical
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	30	
Tutorials	Projects/seminars	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Piotr Skrzypczyński

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tel. 061 6652198

Institute of Robotics and Machine Intelligence

ul. Piotrowo 3A 60-965 Poznań

Prerequisites

Student starting this course should have knowledge of the basics of programming, architecture of computer systems and operating systems, linear algebra. He should also have the ability to obtain information from the indicated sources.

Course objective

The module aims to provide to the students basic concepts, methods and algorithms regarding the foundations of artificial intelligence and its selected areas related to robotics.

Course-related learning outcomes

Knowledge

1. Has knowledge of the basic concepts and methods of artificial intelligence

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2. Knows what methods and algorithms of artificial intelligence are used in robotics.

3. Has knowledge of selected methods of representing problems and algorithms for solving them.

Skills

1. Can choose effective methods of artificial intelligence to solve problems in the field of robotics.

2. Can implement and use basic artificial intelligence algorithms.

Social competences

1. Competent in presenting AI-based solutions in an interdisciplinary team.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: written exam (checking theoretical knowledge) in the field of lectures: concepts, methods, algorithms.

Laboratories: checking practical skills in the field of implementation of selected methods introduced during the lecture, evaluation of reports.

Programme content

Lecture

1. Introduction

2. Types and architectures of AI systems

3. Representation and processing of symbolic information.

4. The concept of state space and search algorithms.

5. Probabilistic methods in AI and Bayesian networks.

6. Introduction to supervised and unsupervised machine learning.

7. Statistical learning systems.

8. Final remarks .

Laboratory (each topic includes from 2 to 3 classes)

1. Searching the space of states

2. Heuristic search algorithms and planning.

3. Application of the Bayes rule and Bayesian networks.

4. Selected methods of statistical learning

5. Selected classifiers.

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Teaching methods

1. Lecture: multimedia presentation, illustrated with examples

2. Laboratory exercises: carrying out the tasks given by the teacher - practical exercises

Bibliography

Basic

1. Flasiński M., Wstęp do sztucznej inteligencji, PWN, 2011.

2. Rutkowski L., Metody i techniki sztucznej inteligencji. PWN, 2009

3. Krawiec K., Stefanowski J., Uczenie maszynowe i sieci neuronowe. Wyd. Politechniki Poznańskiej, 2004.

Additional

1. Nilsson N. J., Artificial Intelligence: A New Synthesis, Morgan Kaufmann, 1998

Breakdown of average student's workload

	Hours	ECTS
Total workload	70	0,3
Classes requiring direct contact with the teacher	-451530	2
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	25	0,1

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[1] delete or add other activities as appropriate