#### card of course

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| Subject name | Terminology for AI model training processes - lecture |

1. The placement of the subject in the study system

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| 1.1. Field of study | Computer science |
| 1.2. Form and path of study | Full-time/Part-time |
| 1.3. Level of education | First-cycle studies |
| 1.4. Study profile | Practical |

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| 1. 5. Specialty | Artificial intelligence |
| 1.6. Subject Coordinator | Dr Michał Kalisz |

2. General characteristics of the subject

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| 2.1. Belonging to a subject group | To choose from |
| 2.2. Number of ECTS | 2 |
| 2.3. Language of lectures | English |
| 2.4. Semesters in which the subject is taught | IV |
| 2.5.Criteria for selecting course participants | For specialization: Artificial Intelligence |

1. Learning outcomes and course delivery
   1. Subject Objectives

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| No. | Subject Objectives |
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| C1 | To introduce students to key concepts and terminology used in training artificial intelligence models. |
| C2 | Developing an understanding of the processes involved in building, training, and evaluating AI models. |
| C3 | Preparation for the use of correct terminology in professional practice and research. |

* 1. Subject-specific learning outcomes, divided into knowledge , skills and competences , with reference to the directional learning outcomes

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| No. | Description of subject  learning outcomes | Reference to  directional effects  learning (symbols) | Method of implementation (mark "X") | | | |
| ST | | NST | |
| Classes at the University | Activities on  the platform | Classes at the University | Activities on  the platform |
| After passing the course, the student knows and understands **the knowledge** | | | | | | |
| W1 | Knows key terms related to AI model training processes, such as cost function, gradient, optimization. | INF\_W07 INF\_W10 INF\_W19 |  | X |  | X |
| W2 | Understands the division of data into training, validation and test sets and their role in the learning process. |  | X |  | X |
| W3 | Understand basic types of machine learning, including supervised, unsupervised, and reinforcement. |  | X |  | X |
| W4 | Understands model building concepts such as hyperparameters, model architecture, layers, and activation functions. |  | X |  | X |
| W5 | Knows basic model evaluation methods, including metrics such as accuracy, precision, recall, F1-score, AUC. |  | X |  | X |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | Is able to responsibly interpret analytical results and take into account their limitations. | INF\_K01 INF\_K05 |  | X |  | X |
| K2 | Is aware of the continuous development of AI technologies and the need to update knowledge. |  | X |  | X |

3.3. Forms of teaching and their number of hours - Full-time studies (ST), Part-time studies (NST)

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| Path | Lecture | Exercises | Design | Workshop | Laboratory | Seminar | Lecturer | Classes conducted using distance learning methods and techniques in the form of a lecture. | Other | **ECTS points** |
| **ST** |  |  |  |  |  |  |  | 20 |  | 2 |
| **NST** |  |  |  |  |  |  |  | 10 |  | 2 |

3.4. Content of education (separately for each form of classes: (W, ĆW, PROJ, WAR, LAB, LEK, OTHER). It should be marked (X) how the given content will be implemented (classes at the university or classes on the e-learning platform conducted using distance learning methods and techniques)

TYPE OF CLASS: LECTURE

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| No. | Content of the course | Reference to subject-specific learning outcomes | Method of implementation (mark "X") | | | |
| ST | | NST | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| 1. | Introduction to AI terminology, key concepts and their meanings | W1, K1 |  | X |  | X |
| 2. | Division of data into training, validation and test sets, importance in the learning process | W2 |  | X |  | X |
| 3. | Types of Machine Learning, Supervised, Unsupervised and Reinforcement | W3 |  | X |  | X |
| 4. | Building AI models, hyperparameters, architecture, activation functions, layers | W4 |  | X |  | X |
| 5. | Model evaluation methods, metrics such as accuracy, precision, recall, F1-score, AUC | W5 |  |  |  |  |
| 6. | Examples of terminology applications in practice, analysis of real cases | W1 – W5, K2 |  |  |  |  |
| 7. | Summary of key issues, exam preparation | K1 |  |  |  |  |

3.5. Methods of verifying learning outcomes (indication and description of methods of conducting classes and verification of achievement of learning outcomes and method of documentation)

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| Subject Effects | Teaching methods | Methods of verifying learning outcomes | Documentation methods |
| KNOWLEDGE | | | |
| W1-W5 | Multimedia presentation | The theoretical exam includes:   1. Definitions of key terms used in training AI models. 2. Explanations of the processes involved in building and training models, such as optimization, data partitioning, activation functions. 3. Analysis of case studies of the use of the terminology in the context of practical AI problems. | Exam archived at WSPA |
| SOCIAL COMPETENCES | | | |
| K1-K2 | Multimedia presentation | The theoretical exam includes:   1. Definitions of key terms used in training AI models. 2. Explanations of the processes involved in building and training models, such as optimization, data partitioning, activation functions. 3. Analysis of case studies of the use of the terminology in the context of practical AI problems. | Exam archived at WSPA |

3.6. Assessment criteria for the achieved learning outcomes

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| Learning effect | For a grade of 3 or "pass."  the student knows and understands/is able to/is ready to | For a grade of 3.5, the student knows and understands/is able to/is ready to | For a grade of 4, the student knows and understands/is able to/is ready to | For a grade of 4.5, the student knows and understands/is able to/is ready to | For a grade of 5, the student knows and understands/is able to/is ready to |
| W | 51-60% of knowledge indicated in learning outcomes | 61-70% of knowledge indicated in learning outcomes | 71-80% of knowledge indicated in learning outcomes | 81-90% of knowledge indicated in learning outcomes | 91-100% of knowledge indicated in learning outcomes |
| U | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |
| K | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |

3.7. Literature

**Basic**

# [Laurence Moroney](https://helion.pl/autorzy/laurence-moroney), Sztuczna inteligencja i uczenie maszynowe dla programistów. Praktyczny przewodnik po sztucznej inteligencji, Helion

1. Kurp, Feliks. Sztuczna inteligencja od podstaw. Gliwice : Helion, 2023.

**Supplementary**

# de Ponteves H., "Sztuczna inteligencja. Błyskawiczne wprowadzenie do uczenia maszynowego, uczenia ze wzmocnieniem i głębokiego uczenia", Helion, 2021

4. Student workload - ECTS points balance

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| --- | --- | --- |
| **Types of student activity** | **Student Load** | |
| **ST** | **NST** |
| **Classes requiring direct contact between the student and the academic teacher at the university premises** | **20** | **10** |
| Classes included in the study plan | 20 | 10 |
| **Student's own work** | **30** | **40** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 15 | 20 |
| Preparation for passing classes | 15 | 20 |
| **TOTAL STUDENT HOURLY LOAD** | **50** | **50** |
| **Number of ECTS points** | **2** | **2** |

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| Last change date | 30/09/2024 |
| The changes were introduced | INF Education Quality Team |
| The changes were approved | Arkadiusz Gwarda, M.A. |