Subject programme

1. Subject name / subject module: **Artificial intelligence**
2. Lecture language: **English**
3. The location of the subject in study plans:
   - Area or areas of the studies: **Computer Engineering and Mechatronics**
   - Degree of the studies: **1st degree studies**
   - Field or fields (implementation of effects standard): **Mechatronics**
4. Supervision of subject implementation:
   - The Institute / Another unit: **Institute of Informatics and Mechatronics**
   - The person responsible for the subject: **Shakhovska Nataliya, dr hab. inż.**
   - People cooperating in the development of the programme of the subject:
5. The number of hours and forms of teaching for individual study system and the evaluation method:

Teaching activities with the tutor																						
Mode of study	Form of classes																					Total
	...	SOW	ECTS	Laboratory work	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies				32	43	3																3
Part-time studies																						
Credit rigor				Exam																		

6. Student workload – ECTS credits balance:
   1 ECTS credit corresponds to 25-30 hours of student work needed to achieve the expected learning outcomes including the student's own work

Activity (please specify relevant work for the subject)	**Hourly student workload (full-time studies/part-time studies)**
Participation in lectures	-
Participation in laboratory classes	32
Preparation to laboratory classes	20
Independent study of the subject	6
Preparation to an exam test	15
Participation in an exam / graded assignment	2
Total student workload (TSW)	75
ECTS credits	3
* Student's workload related to trainings	75
Student's workload in classes requiring direct participation of academic teachers	32

7. Implementation notes: recommended duration (semesters), recommended admission requirements, relations between the forms of classes:
   - Recommended admission requirements – none.
   - Recommended duration of the subject is taken from the course plan.
8. Specific learning outcomes – knowledge, skills and social competence:

Specific learning outcomes for the subject		**Form**	**Teaching method**	**Methods for testing of (checking, assessing) learning outcomes**
Outcome symbol	**Outcome description**			
Knowledge				
K_W04	**To know the methods of data analysis and the methods of knowledge representation. To know the specialized applications of advanced statistical methods and IT tools used to collect, analyze and present data.**	**Laboratory work**	**Inquiry methods**	**Exam Student learning activities**
K_W06	**To know the rules of building and using systems with a knowledge base and has knowledge of their use in the organization.**			
Skills				
K_U09	**Can make a simple database of facts and rules. Is able to use specialized IT tools to analyze selected problems**	**Laboratory work**	**Inquiry methods**	**Exam Student learning activities**

9. Assessment rules / criteria for each form of education and individual grades:

0% - 50%	ndst	**80% - 86%**	db
51% - 70%	dst	**87% - 93%**	db+
71% - 79%	dst+	**94% - 100%**	bdb

Activity	Grades	Calculation	To Final
Lab reports	dst, db, bdb, db (3,4,5,4)	arithmetic mean (3,4,5,4) * 50%	2,0
Exam	bdb (5)	5.0 * 50%	2,5
Final result			4,5
Grade		4,5/5 = 90%	**db+ (4,5)**

10. The learning contents with the form of the class activities on which they are carried out:
(Laboratory work)

1. Search methods;
2. Strengthening learning;
3. Data classification methods;
4. Decision trees;
5. Bayesian networks;
6. Fuzzy systems;
7. Learning without reinforcement;
8. Grouping;
9. Genetic algorithms;
10. Regression;
11. Artificial neural networks

11. Required teaching aids:

a. Lecture - multimedia projector.

b. Laboratory classes - specialist laboratory.

12. Literature:

a. Basic literature:

1. Turban E., Aronson J.,Decision Support Systems and Intelligent Systems. Prentice Hall, 2007
2. Mariusz Flasiński; Introduction to Artificial Intelligence; ISBN 978-3-319-40022-8; Springer 2016

b. Supplementary literature:

1. Donald J. Norris; Beginning Artificial Intelligence with the Raspberry Pi; ISBN 978-1-4842-2743-5; Apress, Berkeley, CA 2017
2. Achim Zielesny; From Curve Fitting to Machine Learning; ISBN 978-3-319-32545-3; Springer, Cham 2016

13. Available educational materials divided into forms of class activities (Author's compilation of didactic materials, e-learning materials, etc.)

14. Teachers implementing particular forms of education:

Form of education	Name and surname
1. Lecture	
2. Laboratory classes	Shakhovska Nataliya, dr hab. inż.