



COURSE CARD

1. Basic information

Course name in English:	Intelligent Techniques and their applications	
Course name in Polish:	Inteligentne techniki i ich zastosowania	
Number of hours:	15	
Type of course:	Elective course	
Form of course:	seminar	
Code of course:	W04ITT-SD0049S / ITQ100337S	
Course leader:	<i>Prof. Halina Kwaśnicka</i>	
Faculty of the course leader:	W4 Faculty of Information and Communication Technology	
Email address of the course leader:	halina.kwasnicka@pwr.edu.pl	
Scientific discipline(s) assigned to the course (doctoral students representing the marked disciplines can participate in the course):	Architecture and urban planning	<input checked="" type="checkbox"/>
	Automation, electronic, and electrical engineering	<input checked="" type="checkbox"/>
	Information and communication technology	<input checked="" type="checkbox"/>
	Biomedical engineering	<input checked="" type="checkbox"/>
	Chemical engineering	<input checked="" type="checkbox"/>
	Civil engineering and transport	<input checked="" type="checkbox"/>
	Mechanical engineering	<input checked="" type="checkbox"/>
	Environmental engineering, mining, and energy	<input checked="" type="checkbox"/>
	Mathematics	<input checked="" type="checkbox"/>
	Chemical sciences	<input checked="" type="checkbox"/>
	Physical sciences	<input checked="" type="checkbox"/>
	Management and quality studies	<input checked="" type="checkbox"/>

2. Objectives

1. Getting to know the intelligent methods and their applications in the area subject to the PhD student's research
2. Getting to know the potential applications of different intelligent methods in various practical issues
3. Improving the skill of scientific discourse

3. Content

Detailed information about the course content, including topics and form of classes.

No.	Topic	Number of hours	Form of classes
1	Discussing the purpose, scope and manner of the seminar implementation, setting the dates and topics of the papers	2	seminar



2	Individual presentations of topics related to the study area of a PhD student	12	seminar
3	Summary of classes	1	seminar

4. Prerequisites

List of prerequisites relating to knowledge, skills and other competences for course participants.

1. Basic knowledge on a selected area of artificial intelligence, e.g. machine learning, knowledge engineering, metaheuristics, ...
2. The ability to search for scientific information on a given topic
3. Skill in preparation and oral presentation on a given topic

5. Learning outcomes

List of learning outcomes at level 8 of the Polish Qualifications Framework assigned to the course (mark the learning outcomes in the last column).

Symbol	Learning outcome	
	<i>KNOWLEDGE. Doctoral student knows and understands:</i>	
SzD_W3	the main trends in the development of the scientific or artistic disciplines covered in the curricula;	<input type="checkbox"/>
SzD_W4	research methodology;	<input type="checkbox"/>
SzD_W5	the rules for the dissemination of scientific results, including in open access mode;	<input type="checkbox"/>
SzD_W6	the fundamental dilemmas of modern civilization;	<input type="checkbox"/>
SzD_W7	the legal and ethical conditions of scientific activity;	<input type="checkbox"/>
SzD_W8	the economic and other relevant conditions of scientific activity;	<input type="checkbox"/>
SzD_W9	basic principles of knowledge transfer to the economic and social spheres and commercialisation of results of scientific activity and know-how related to these results.	<input type="checkbox"/>
	<i>SKILLS. Doctoral student is able to:</i>	
SzD_U2	use knowledge from different fields of science or art to creatively identify, formulate and innovatively solve complex problems or perform research tasks, in particular: - define the purpose and subject of scientific research, formulate a research hypothesis, - develop research methods, techniques and tools, and use them creatively, - draw conclusions on the basis of scientific research; critically analyse and evaluate the results of scientific research, expertise and other creative work and their contribution to knowledge development; transfer the results of scientific activities to the economic and social spheres;	<input checked="" type="checkbox"/>
SzD_U3	communicate on specialised topics to the extent that they enable an active participation in the international scientific community;	<input checked="" type="checkbox"/>
SzD_U4	disseminate research results, including in popular forms;	<input checked="" type="checkbox"/>
SzD_U5	initiate debates and participate in a scientific discourse;	<input checked="" type="checkbox"/>



SzD_U6	be able to speak a foreign language at B2 level of the Common European Framework of Reference for Languages to a level that enables them to participate in the international scientific and professional environment;	<input checked="" type="checkbox"/>
SzD_U7	plan and implement an individual or collective research or creative activity, including in an international environment;	<input type="checkbox"/>
SzD_U8	independently plan and act for one's own development and inspire and organize the development of others;	<input type="checkbox"/>
SzD_U9	plan classes or groups of classes and implement them using modern methods and tools.	<input type="checkbox"/>
<i>SOCIAL COMPETENCES. Doctoral student is ready to:</i>		
SzD_K3	fulfilling the social obligations of researchers and creators, initiate public interest activities, thinking and acting in an entrepreneurial way;	<input type="checkbox"/>
SzD_K4	maintaining and developing the ethos of research and creative environments, including: - carrying out scientific activities in an independent manner, - respecting the principle of public ownership of research results, taking into account the principles of intellectual property protection.	<input type="checkbox"/>

6. Evaluation

Short description of the method(s) used to evaluate the learning outcomes assigned to the course, e.g., exam, test, report, presentation, etc.

Oral presentation

7. Teaching methods

Short description of the teaching methods used during the course, e.g., multimedia presentation, discussion, literature studies, developing written documents, own work, etc.

1. Projector and other audio-visual media, depending on needs and possibilities
2. Panel discussions, as time is available (after the speeches of all participants of the course)

8. Literature

List of primary and secondary literature used to prepare the course and including additional knowledge for participants, e.g., books, textbooks, research papers, standards, web pages, etc.

Primary:

[1] Current scientific publications, including articles in journals with a high impact factor. Examples of titles are: *IEEE Transactions on Industrial Informatics*, *IEEE Transactions on Neural Networks and Learning Systems*, *Artificial Intelligence Review*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *Artificial Intelligence*, *Knowledge-Based Systems*, and any other journals that are important in the scientific community.

[2] Current conference publications of scientific conferences that are important in the world scientific community.

Secondary:

[1] Any sources on: How to prepare and well present a scientific presentation.

9. Other remarks



Additional remarks, comments, (e.g., language of the course)