KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Politechnika Świętokrzyska

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

Projekt współfinansowany ze środków Unii Europejskiej w ramach Europejskiego Funduszu Społecznego

MODULE DESCRIPTION

Module code	**ID1SII4**
Module name	**Systemy inteligentne 1**
Module name in English	**Intelligent Systems 1**
Valid from academic year	**2012/2013**

MODULE PLACEMENT IN THE SYLLABUS

Subject	**Computer Science**
Level of education	**1st degree** *(1st degree / 2nd degree)*
Studies profile	**General** *(general / practical)*
Form and method of conducting classes	**Full-time** *(full-time / part-time)*
Specialisation	
Unit conducting the module	**The Department of Electronics and Intelligent Systems**
Module co-ordinator	**Prof. Marian Gorzałczany, PhD hab., Eng.**
Approved by:	

MODULE OVERVIEW

Type of subject/group of subjects	**Major** *(basic / major / specialist subject / conjoint / other HES)*
Module status	**Compulsory** *(compulsory / non-compulsory)*
Language of conducting classes	**Polish**
Module placement in the syllabus - semester	**4th semester**
Subject realisation in the academic year	**Summer semester** *(winter / summer)*
Initial requirements	**No requirements** *(module codes / module names)*
Examination	**Yes** *(yes / no)*
Number of ECTS credit points	**5**

Method of conducting classes	Lecture	Classes	Laboratory	Project	Other
Per semester	**30**	**15**			

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Program Operacyjny Kapitał Ludzki Priorytet IV Działanie 4.1, Poddziałanie 4.1.1
na podstawie umowy z Ministerstwem Nauki i Szkolnictwa Wyższego **UDA – POKL.04.01.01-00-381/10-00**

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TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Module target	The aim of the module is to familiarise students with the selected methods and techniques of artificial intelligence to facilitate designing certain classes of intelligent systems (including decision support systems) in diverse areas of interests.

Effect symbol	Teaching results	Teaching methods *(l/c/l/p/other)*	Reference to subject effects	Reference to effects of a field of study
W_01	A student has fundamental knowledge of characteristic attributes as regards the systems described as intelligent with the methods of representing knowledge and inference in such systems.	l/c	K_W07 K_W13	T1A_W03
W_02	A student has basic knowledge as regards the principle of operations and the teaching technique concerning artificial neural networks (multilayer perceptron) and association memories built on the Hopfield neural network.	l/c	K_W07 K_W13	T1A_W03 T1A_W04
W_03	A student has basic knowledge as regards induction methods of decision trees.	l/c	K_W07 K_W13	T1A_W03 T1A_W04
U_01	A student can design a neural system of supporting decisions on the basis of data describing a decision-making process.	l/c	K_U07 K_U09 K_U11	T1A_U07 T1A_U08 T1A_U09
U_02	A student can conduct a process of 'discovering' knowledge in data utilising the techniques of decision trees.	l/c	K_U07 K_U09 K_U11	T1A_U07 T1A_U08 T1A_U09

Teaching contents:

Teaching contents as regards lectures

Lecture number	Teaching contents	Reference to teaching results for a module
1-2	Introduction to the subject of intelligent systems (the concept of artificial intelligence, a historical outline, basic issues, sample classification of intelligent systems). The outline of knowledge representation methods (the concept of knowledge, rule knowledge representation, and computational models) as well as the outline of inference methods in intelligent systems [forward, backward, mixed, and approximate (fuzzy].	W_01
3-7	Artificial neural networks (basic properties, a historical outline, and classification). A single artificial neuron (a model, analytical weight selection as well because of learning). Single- and multilayer perceptron (the structure, weight selection as a result of learning – the algorithm of backward propagation of errors, and sample applications).	W_02, U_01
8-10	Machine learning systems (the classification and a historical outline). Decision tree induction (introduction, a diagram of constructing decision trees for symbolic and numerical attributes, and sample applications).	W_03, U_02
11-13	Association memories with the use of Hopfield neural networks (introduction, structure, save to memory algorithms, memory reading algorithms, and sample applications).	W_02
14-15	The elements of programming in the Prolog language (introduction, basic language structures, and sample programs).	W_01

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Teaching contents as regards classes

Class number	Teaching contents	Reference to teaching results for a module
1	The algorithms of teaching artificial perceptron-type neural networks.	W_02, U_01
2	Designing a neural structure reflecting linearly inseparable data (e.g. the role of the so-called hidden network layers).	W_02, U_01
4	A written test.	
5	Data analysis with the use of decision tree technique.	W_03, U_02
6	The analysis of association memory built on the basis of the Hopfield neural network.	W_02
7	Simple algorithms in Prolog.	W_01
8	A written test.	

The methods of assessing teaching results

Effect symbol	Methods of assessing teaching results *(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)*
W_01	A written test and an examination.
W_02	A written test and an examination.
W_03	A written test and an examination.
U_01	A written test and an examination.
U_02	A written test and an examination.

STUDENT'S INPUT

	ECTS credit points	
	Type of student's activity	**Student's workload**
1	Participation in lectures	**30**
2	Participation in classes	**15**
3	Participation in laboratories	
4	Participation in tutorials (2-3 times per semester)	**9**
5	Participation in project classes	
6	Project tutorials	
7	Participation in an examination	**6**
8		
9	**Number of hours requiring a lecturer's assistance**	**60** *(sum)*
10	**Number of ECTS credit points which are allocated for assisted work** *(1 ECTS credit point=25-30 hours)*	**2.4**
11	Unassisted study of lecture subjects	**15**
12	Unassisted preparation for classes	**15**
13	Unassisted preparation for tests	**15**
14	Unassisted preparation for laboratories	
15	Preparing reports	
16	Preparing for a final laboratory test	

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17	Preparing a project or documentation	
18	Preparing for an examination	**20**
19	Preparing questionnaires	
20	**Number of hours of a student's unassisted work**	**65** *(sum)*
21	**Number of ECTS credit points which a student receives for unassisted work** *(1 ECTS credit point=25-30 hours)*	**3.6**
22	**Total number of hours of a student's work**	**125**
23	**ECTS credit points per module** *1 ECTS credit point=25-30 hours*	**5**
24	**Work input connected with practical classes** *Total number of hours connected with practical classes*	**30**
25	**Number of ECTS credit points which a student receives for practical classes** *(1 ECTS credit point=25-30 hours)*	**1.2**

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