

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Agent systems</b>		Code <b>1010331571010332548</b>
Field of study <b>Information Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>4 / 7</b>
Elective path/specialty <b>Information Technologies</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>30</b> Classes: <b>-</b> Laboratory: <b>15</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b> <b>5 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Grażyna Brzykcy email: grazyna.brzykcy@put.poznan.pl tel. 616653724 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Student has well founded knowledge of program constructs, implementation of algorithms, compilers, programming platforms and software engineering.
2	<b>Skills</b>	Student is able to acquire information from literature, data bases and other sources, to create engineer work documentation and to prepare text with the work result discussion. Student is able to use software platforms and environments for programs encoding, running and testing.
3	<b>Social competencies</b>	Student understands the responsibility associated to his own work. Student is able to adhere to team work rules and to take responsibility for cooperative tasks.
<b>Assumptions and objectives of the course:</b> Presentation of software solutions from modern distributed systems, particularly Multi-Agent Systems (MAS). Learning solutions from communication, coordination and cooperation areas of MAS.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Student has organized and theoretically founded knowledge of agent systems. - [[K_W09]] 2. Student has organized and theoretically founded knowledge of software agent engineering. - [[K_W12]] 3. Student is familiarized with state of the art and current trends in computer science. - [[K_W19]]		
<b>Skills:</b>		
1. Student is able to read descriptions and manuals of software tools. - [[K_U06]] 2. Student is able to plan and perform experiments, to use mathematical methods, models and computer simulation to test, analyze and assess agent system performance. - [[K_U07]] 3. Student is able to define and create a simple agent system. - [[K_U13]]		
<b>Social competencies:</b>		
1. Student understands the necessity of continuous education and development of different skills (linguistic, professional, personal and social). - [[K_K01]] 2. Student understands the importance of stringent accomplishment of a given project with proper notation standards, proper language. Student understands the importance of keeping deadlines. - [[K_K07]]		
<b>Assessment methods of study outcomes</b>		

<p>Lecture                  Written exam based on lecture (basic concepts and techniques used in agent systems).                  Laboratory                  Students? marks are based on continuous assessment of exercises and presentation of their results.</p>		
<b>Course description</b>		
<p>Lecture                  Concept of agent, software agents classification. Characteristics of deliberative, reactive and interactive agents. Generic and hybrid architectures. Multi-agent systems (MAS), and open systems properties. Standards of knowledge sharing and communication languages in MAS. Coordination and cooperation methods.</p> <p>Teaching methods:                  - presentation of the theory with references to practical examples of software implementations,                  - lecture with multimedia presentation,                  - students being asked questions during the lectures in order to provoke discussions.</p> <p>Course update 2017:                  - presentation of actors model,                  - modification of examples.</p> <p>Laboratory                  Students practice with agent applications (Erlang with actor model) and design by themselves parts of such systems.                  Exemplary plan of laboratories: analysis and running of example models, individual models of simple agents, plan of agent actions, communication between agents.</p> <p>Teaching methods                  - individual work with open-source environment (homework mainly),                  - tutorials and software components made available to students to support their homework,                  - short presentation, discussion and evaluation of the final results of the student?s work.</p> <p>Laboratory update 2017:                  - new agent environment (Erlang with actor model),                  - generally modified set of examples.</p>		
<p><b>Basic bibliography:</b>                  1. Brzykcy G.: Wybrane środowiska do definiowania systemów agentowych. Pro-Dialog, nr 15, Wydawnictwo Nakom, Poznań, 2003, s.1-18.                  2. Haber F.: Learn you someERLANG for great good! A beginner's guide (on-line learnyousomeerlang.com), 2017.                  3. Wooldridge M.: An Introduction to MultiAgent Systems ? Second Edition. John Wiley &amp; Sons, 2009.                  4. Pankowski T., Brzykcy G., Faceted Query Answering in a Multiagent System of Ontology-Enhanced Databases. G. Jezic et al. (eds.), Agent and Multi-Agent Systems: Technology and Applications, Smart Innovation, Systems and Technologies 58, Springer Switzerland 2016.</p>		
<p><b>Additional bibliography:</b>                  1. Bradshaw J. (ed.): Software Agents. The MIT Press, 1997.                  2. Cesarini F., Thompson S.: Erlang Programming. O'Reilly Media, 2009                  3. Müller J.: The Design of Intelligent Agents. A Layered Approach. LNAI 1177, Springer, 1996.                  4. Wooldridge M., Jennings R.: Agent Technology. Springer, 2010.</p>		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Lecture	30	
2. Laboratory	15	
3. Preparation to laboratory	45	
4. Preparation to exam	35	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>

Total workload	125	5
Contact hours	50	2
Practical activities	60	2