

DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Computer Management of Complex Systems				
Study programme	Specialist professional graduate study of Information Technology in Business Systems				
Status of a course	Obligatory				
Year of study	1	Semester (Winter/Summer)	S	ECTS credits	6
Goals of a course					
Acquiring specific competencies in the areas of modelling, analyzing and managing complex systems, and connecting them to computers to manage and control systems of different architectures and control loops. From general competences, developing the ability to analyze and synthesize, work independently and work in small groups (team work) and present the achieved results.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
Outcome 10: Explain the basic concepts of computer-controlled complex, process and production systems. Outcome 15: Analyse and recommend the use of IT tools within a business organization. Outcome 16: Assess the place and role of ICT in the context of organization, management and business processes. Outcome 17: Present development and software solutions within a business organization. Outcome 18: Present ICT solutions in a business organization.					
Expected learning outcomes on a level of a course					
<ol style="list-style-type: none"> 1. Model complex systems with possible simplifications. 2. Analyse complex systems by different methods. 3. Apply basic system management methods and system stability analyses. 4. Connect a complex system to system management and control computers of different architectures and control loops. 5. Suggest hardware design for a computer-controlled system. 					
Content of a course					
System and its characteristics. System as a starting point for researches and solving problems. Parts of a system, its characteristics, rules. Types of systems. System approach. Basics of system approach. Algorithmic and heuristic methods. Technique of presenting system and system relationships. System models. Models in informatics. Techniques in system presenting and analysis. Complex systems. Guidelines on complexity and complex systems characteristics. Systems from the aspect of differences of their components. System holism. Complex systems models. System dynamics. Examples of complex systems: sociological, economic, ecological, energy, biological, health, military, geophysical. System management. Application of the usual management techniques. System analysis and evaluation. Decision preparing. Information selection. System hierarchical structuring from the aspect of information use. Information technologies as a support in complex system management. Information technologies as methods, methodologies and tools.					
Teaching modes	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> auditory exercises <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> distance learning <input type="checkbox"/> field classes		<input checked="" type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and network <input type="checkbox"/> laboratory <input type="checkbox"/> supervisor's work <input type="checkbox"/> other _____		
Grading, evaluation and monitoring of students' work continuously during lectures and exams					
Grading is based upon evaluation course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.					