

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Virtual machines</b>		Code <b>1010331451010337140</b>
Field of study <b>Information Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>3 / 5</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>elective</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>2</b> Classes: <b>-</b> Laboratory: <b>1</b> Project/seminars: <b>-</b>		No. of credits <b>4</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>		ECTS distribution (number and %) <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Krzysztof Bucholc email: krzysztof.bucholc@put.poznan.pl tel. +48 61 665 3531 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 organized knowledge with theoretical foundations of computer architecture, principles of operation of operating systems and types of operating systems - K_W06
2	<b>Skills</b>	Student is able to use programming environments and platforms to write, perform and test simple programs coded in imperative programming languages - [K_U10] Student is able to do critical analysis of computer hardware operations, operating system and computer networks - U_11
3	<b>Social competencies</b>	Student understands and is aware of the importance of nontechnical issues related to computer engineer activity. Student understands the responsibility associated to his engineering decisions. - K_K02
<b>Assumptions and objectives of the course:</b> The aim of the course is to present how to use virtualization in a computer system. We will focus on x86 architecture.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Student is knowledgeable with the state of art and modern trends in software engineering and computing - [[K_W19]]		
<b>Skills:</b>		
1. Student is able to evaluate the usefulness of routine methods and tools for solving simple tasks typical of engineering informatics and select and apply appropriate technologies - [[K_U22]]		
<b>Social competencies:</b>		
1. Student understands the need and knows possibilities of constant training oneself of raising linguistic, professional, personal and social competence. - [[K_K01]]		
<b>Assessment methods of study outcomes</b>		
Lecture: Final test Laboratory: Two tests. Reports assessment.		
<b>Course description</b>		

<p>Lecture: Introduction to virtualization. Virtualization models. Formal definition of virtualization. Popek- Goldberg theorem. Selected solutions for x86 virtualization. Selected applications of virtual machines. Usage of sandboxes for potentially harmful program investigation.</p> <p>Laboratory: x86 architecture virtualization. Installing of operating system on virtual machine. Performance of virtualization. Program investigation using a sandbox.</p>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Smith. J, Nair R., Virtual Machines: Versatile Platforms for Systems and Processes, Morgan Kaufmann, 2005</li> <li>2. Craig I.D., Virtual Machines, Springer, 2006</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Roebuck K., Virtual Machines , Emereo Pty Ltd, 2011</li> <li>2. Hoopes J., Virtualization for Security, Syngress, 2008</li> </ol>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>	<p><b>Time (working hours)</b></p>	
1. Lecture	15	
2. Laboratory	15	
3. Preparation for laboratory.	15	
4. Reports preparation.	15	
5. Preparation for final test	35	
6. Consultations and final test	5	
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	100	4
Contact hours	20	1
Practical activities	45	2