

DESCRIPTION OF THE COURSE OF STUDY

Course code	0719-2ID-F58-WŚS	
Name of the course in	Polish	<i>Virtualizacja środowisk serwerowych</i>
	English	<i>Virtualization of Server Environments</i>

1. LOCATION OF THE COURSE OF STUDY within the system of studies

1.1. Field of study	Data Engineering
1.2. Mode of study	Full-time
1.3. Level of study	First-cycle engineering studies
1.4. Profile of study*	General academic profile
1.5. Person/s preparing the course description	Rafał Kaczmarzyk
1.6. Contact	rkaczmarzyk@interia.pl

2. GENERAL CHARACTERISTICS OF THE course of study

2.1. Language of instruction	Polish
2.2. Prerequisites*	None

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lectures, laboratories	
3.2. Place of classes	Classes in UJK teaching rooms	
3.3. Form of assessment	credit with grade (lectures, laboratories)	
3.4. Teaching methods	Lecture using multimedia techniques	
3.5. Bibliography	Required reading	1. Matthew Portnoy, Virtualization Essentials, Wiley. 2. Scott Lowe, Mastering VMware vSphere, Sybex. 3. David Clinton, Virtualization: A Beginner's Guide, McGraw-Hill.
	Further reading	1. Kelsey Hightower, Brendan Burns, Joe Beda, Kubernetes: Up and Running, O'Reilly Media. 2. Richard McDougall, VMware Performance and Resource Management, VMware Press.

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

4.1 Course objectives (including form of classes)

- C1. To introduce students to the principles and applications of virtualization and containerization technologies.
 C2. To develop practical skills in configuring, maintaining, and securing virtual environments.
 C3. To understand the architecture and components of high-availability environments and their integration with network infrastructure.

4.2 Detailed syllabus (including form of classes)

Lecture, Laboratory

- Introduction to virtualization – concepts of virtualization, containerization, and sandboxing.
- Virtualization tools – overview of solutions from home to enterprise environments.
- Architecture of virtualization systems.
- Network communication in virtual environments.
- Mechanisms of disk space access.
- Creation and maintenance of virtual machines.
- Distributed environments.
- High-availability systems – failover clustering solutions.
- Network traffic load balancing.
- Backup and recovery of virtualized systems.

4.3 Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
within the scope of KNOWLEDGE:		
W01	knows the architecture and basic mechanisms of virtualization and containerization.	ID1A_W06, ID1A_W07
W02	knows the tools and solutions for server environment virtualization and their practical applications.	ID1A_W07, ID1A_W10
within the scope of ABILITIES:		

U01	is able to configure a virtual environment using a selected tool (e.g., VMware, Proxmox, Hyper-V, VirtualBox).	ID1A_U06, ID1A_U07
U02	is able to deploy and maintain a high-availability system as well as load balancing and backup mechanisms.	ID1A_U08, ID1A_U09
U03	is able to diagnose problems and optimize the performance of a virtualized environment.	ID1A_U09, ID1A_U13
within the scope of SOCIAL COMPETENCE:		
K01	understands the importance of reliability, security, and efficiency in designing virtual infrastructure, and is able to collaborate within a technical team in designing and implementing server environments.	ID1A_K01, ID1A_K03, ID1A_K04

4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Method of assessment (+/-)																				
	Exam oral/written*			Test*			Project*			Effort in class*			Self-study*			Group work*			Others* e.g. standardized test used in e-learning		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Lecture, tutorial		
	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P	L	C	P
W01				+																	
W02				+																	
U01					+						+										
U02					+						+										
U03					+						+										
K01											+										

*delete as appropriate

4.5. Criteria of assessment of the intended learning outcomes

Form of classes	Grade	Criterion of assessment
lecture (L) (including e-learning)	3	Achievement of <50-60)% of the requirements specified in the assessment methods
	3,5	Achievement of <60-70)% of the requirements specified in the assessment methods
	4	Achievement of <70-80)% of the requirements specified in the assessment methods
	4,5	Achievement of <80-90)% of the requirements specified in the assessment methods
	5	Achievement of <90-100)% of the requirements specified in the assessment methods
classes (C)* (including e-learning)	3	Achievement of <50-60)% of the requirements specified in the assessment methods
	3,5	Achievement of <60-70)% of the requirements specified in the assessment methods
	4	Achievement of <70-80)% of the requirements specified in the assessment methods
	4,5	Achievement of <80-90)% of the requirements specified in the assessment methods
	5	Achievement of <90-100)% of the requirements specified in the assessment methods

5. BALANCE OF ECTS CREDITS - STUDENT'S WORK INPUT

Category	Student's workload	
	Full-time studies	Extramural studies
NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/	30	
Participation in lectures*	15	
Participation in classes, seminars, laboratories*	15	
INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/	20	
Preparation for the lectures	10	
Preparation for the classes, seminars, laboratories*	10	
TOTAL NUMBER OF HOURS	50	
ECTS credits for the course of study	2	

*delete as appropriate

Accepted for execution (date and legible signatures of the teachers running the course in the given academic year)

.....