

Course Specifications

Valid in the academic year 2023-2024

System Administration (E765025)

Course size	(nominal values; actual valu	ues may depend on prog	ramme)		
Credits 6.0	Study time 170 h				
Course offerings and tea	aching methods in academic	year 2023-2024			
A (semester 2)	Dutch	Gent		lecture	
				seminar	
Lecturers in academic ye	ear 2023-2024				
Volckaert, Bruno			TW05	lecturer-in-	charge
Offered in the following programmes in 2023-2024				crdts	offering
Master of Science in Information Engineering Technology			6	A	
				-	
Teaching languages					
Dutch					
Vouworde					
Keywolus Window Common Da	a shall Asl' a D'as da a Cas				
Windows Server, Po	wershell, Active Directory, Sys	tem administration,			
	Jue, clouu				
Position of the course					
Thorough study of I	modern usage and manageme	nt of systems in datacer	nters and		
clouds					
Contents					
Windows Server					
Powershell Desired State C	enfinuenting (DCC)				
Desired State Configuration (DSC) Active Directory Enderstian Convises (ADEC). Arms AD					
ALLIVE DIRECTORY File systems	, ACLIVE DIRECTORY FEDERATION S	ervices (ADFS), AZUTE AD			
Cloud file system	ms like OneDrive Google drive	1			
Storage virtualisation Software Defined Storage distributed storage IOPS					
redundancy (SAN, NAS, archiving, object storage, etc.)					
Cloud					
 IAAS, PAAS, SAAS 	5, FAAS, MAAS				
 Public cloud (e.g. Amazon AWS / Google Cloud / Microsoft Azure) 					
Private cloud					
Hybrid cloud					
VIFTUALISATION Hypervisers (e)	y VCaboro VMWaro Ecvi Huno	r_\/_///M\			
	g. vspilele, vmwale, csxi, nype ement (e.a. 111NS / storage arr:				
Backup and disc	aster recovery (strategies and	concents)			
 High availabilit 	γ				
Containers and	container orchestration (adva	nced concepts): Docker,			
Kubernetes, Op	enShift				
 Scripting: auton 	nation, logging				
Monitoring: alerti	ng – metrics (e.g. SCOM Micros	soft, Zabbix, ELK stack:			
Elasticsearch / Lo	gstash / Kibana, Telegraf/Influ	xɑb/Gratana)			
Patch manageme Automation confi	inuration management (e.g. Ar	ncible Caltetack)			
 Automation, COM Provisioning tool 	s (e a Punnet / Chef)	ואושול, אמוואומנאן			
 Infrastructure as 	Code (e.g. Terraform of AWS CI	oudFormation)			
Remote execution	n				

• ITIL4

Initial competences

- Knowing the basic principles of computer architecture and of the architecture of operating systems.
- Being able to configure network interfaces.
- Being able to use and debug static and dynamic IP routing, in mixed IPv4/IPv6 environments.

Final competences

- 1 Being able to configure Windows Server systems and manage them by means of Powershell
- 2 Being able to manage and configure file systems (local / cloud)
- 3 Knowledge of IaaS, PaaS, SaaS, FaaS and MaaS Cloud-concepts and advanced virtualisation techniques
- 4 Being able to apply Infrastructure as Code and automation tools
- 5 Being able to configure and deploy a monitoring stack for system administration

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Seminar, Lecture

Extra information on the teaching methods

Lecture, seminar: practical PC room classes (or on a laptop)

Learning materials and price

Slides on the electronic learning platform

References

Windows Server 2019 Inside Out, Orin Thomas, 5/26/2020, 1st Edition, ISBN 978-0-13549227-7

Course content-related study coaching

Interactive support via the electronic learning environment; assistant-guided labs; contact with professor and assistants through mailing list and personally by means of an appointment.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment

Examination methods in case of periodic assessment during the second examination period

Written assessment

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

- First term:
 - PE1: written exam with open questions
 - NPE1: evaluation of result labs based on report / scripts
- Second term:
 - PE2: written exam with open questions
 - NPE2: evaluation of result labs based on report / scripts

Calculation of the examination mark

- 50% of the final grade is determined by the answers to the written exam
- 50% of the final grade is determined by evaluation of the result of the labs
- To pass, a student needs to receive at least 9/20 for both the PE and NPE. If this is not the case and the calculated result is 10 or more, the final grade will be

changed and the student receives 9/20.