DESCRIPTION/Syllabi of Curricula/Module

Short Name of the University/Country code Date (Month / Year)	DSEA Jan 2019
TITLE OF THE MODULE	**Code**
Cloud technologies and services	

Teacher(s)	Department
Coordinating: Gurkovska Svitlana, PhD Olexander Altukhov, PhD **Others:**	Department of Computer and Information Technology (CIT)

Study cycle (BA/MA)	Level of the module (Semester number)	Type of the module (compulsary/elective)
Master	2th semester (first year) for Master	elective

Form of delivery (theory/lab/exercises)	Duration (weeks/months)	Language(s)
Lectures, lab	8 weeks	Ukrainian / English

Prerequisites	
Prerequisites: the study of the disciplines "System programming and operating systems", "Circuit engineering", "Computers and microprocessor systems" and "Organization of Databases and Knowledge"	**Co-requisites (if necessary):** the study of the disciplines "Administration of information systems", "Web-programming"

ECTS (Credits of the module)	Total student workload hours	Contact hours	Individual work hours
5,5	165	72	93

Aim of the module (course unit): competences foreseen by the study programme

Students should be able to: formation of cognitive, affective and motor competencies in the study and explanation of a set of basic concepts and knowledge in the field of software development using cloud technologies and services, architectures and technologies of distributed computing, interaction of distributed system components, software for distributed systems, and development and the formation of students' complex knowledge and skills from the technological cycle of creating software products for distributed data processing using cloud technologies and services. The course is aimed at developing students' theoretical and practical skills in working with cloud technologies and services.

Learning outcomes of module (course unit)	Teaching/learning methods (theory, lab, exercises)	Assessment methods (written exam, oral exam, reports)
Knowledge: - to teach the future specialist in computer science knowledge and use of fundamental concepts and practical solutions that underlie modern cloud technologies and services; - acquaintance with the basic principles of distributed data processing based on cloud technologies and services; - consideration of specialized platforms based on cloud technologies and services; - acquisition of skills of analysis and algorithmic thinking, formation of argumentation when choosing a platform of cloud technologies and services; - formation of skills and abilities to use development tools to create distributed systems based on cloud technologies and services.	Work with the lecture notes as well as on the available fundamental subject literature	Knowledge test
Skills: - provide analysis of large data sets, including unstructured, based on information and data models, through the use of modern tools for developing client-server applications and deployment of distributed databases, including cloud services, to solve data processing problems in subject areas of their collection and	Lectures, lab, consultation	Active attendance on lectures, individual project and presentation

accumulation; - to develop computerized systems using system programming languages and methods of program development that interact with the components of computer systems, based on knowledge of network technologies and computer network architecture.		
Competences: - ability to take into account the basic requirements of information security, ethical and legal aspects of the use of information in various subject areas (technical, organizational, technical and medical purposes); - ability to solve problems of collecting, accumulating and processing large data sets using modern tools for developing client-server architectures and using distributed databases; - ability to use network technologies of data transmission, appropriate programming languages and equipment, in the creation and research of computerized systems.	Lectures, practiacl work, consultation	Individual project and presentation

Themes	**Contact work hours**							**Time and tasks for individual work**	
	Lectures	Consultations	Seminars	Practiacl work	Laboratory work	Placements	**Total contact work**	**Individual work**	**Tasks**
1. Introduction to distributed computing systems. Definition of a distributed computer system (DCS). Intermediate software. DCS terminology. Classification of DCS.	4				-		**4**	**10**	Study exam/ complete exercise
2. Cluster architecture. Client-server architecture. Distributed systems architecture.	4				-		**4**	**10**	Study exam/ complete exercise
3. Web. Client-server model. Object distributed systems. Agent technologies. Service-	4				-		**4**	**10**	Study exam/ complete exercise

oriented architecture. Web services. Peer-to-peer network technologies. GRID technologies. Cloud computing.									
4. Interaction of system-wide services of GRID and cloud structure. Methods for estimating process states in spatially distributed systems.	4				-		**4**	**10**	Study exam/ complete exercise
5. SOA concept. Connectivity of software systems. Principles of SOA construction. SOA approach.	4				-		**4**	**10**	Study exam/ complete exercise
6. GRID architecture. GRID standards. Globus system. UNICORE system. Parametric models of GRID performance.	4				4		**8**	**10**	Study exam/ complete exercise
7. Definition of cloud computing. Multilayer architecture of cloud applications. Components of cloud applications. Classification of clouds. The most common cloud platforms.	4				12		**16**	**10**	Study exam/ complete exercise
8. Microsoft Windows Azure. PaaS from Microsoft. Windows Azure Tools for MVS. The composition of the Windows Azure platform.	4				12		**16**	**13**	Study exam/ complete exercise
9. Google App Engine. PaaS from Google. Google App Engine. The composition of the Google App Engine platform.	4				8		**12**	**10**	Study exam/ complete exercise
Total	**36**				**36**		**72**	**93**	

Assessment strategy	**Weight in %**	**Deadlines**	**Assessment criteria**
written exam theory	40%	during the semester / exam	Good response to the questions
Practical exam on a computer	60%	during the semester / exam	the work is done completely without mistakes or minor errors

Author	Year of issue	Title	No of periodical or volume	Place of printing. Printing house or internet link
Compulsory literature				
Haishi Bai	2018	Programming Microsoft Azure Service Fabric		Microsoft Press, ISBN 9781509307098
Mitesh Soni	2017	Implementing Devops with Microsoft Azure		Packt Publishing, ISBN 9781787127029
Julian Soh; Marshall Copeland; Anthony Puca; Micheleen Harris	2020	Microsoft Azure. Planning, Deploying, and Managing the Cloud		APRESS, ISBN 9781484259580
Christel Baier, Luís Caires	2018	Formal Techniques for Distributed Objects, Components, and Systems		Springer International Publishing, ISBN 978-3-319-92611-7, 978-3-319-92612-4
Additional literature				
Giancarlo Fortino, A.B.M. Shawkat Ali, Mukaddim Pathan, Antonio Guerrieri, Giuseppe Di Fatta	2018	Internet and Distributed Computing Systems		Springer International Publishing, ISBN 978-3-319-97794-2, 978-3-319-97795-9