Faculty: FACULTY OF TELECOMMUNICATIONS AND MANAGEMENT
Department: GENERAL ENGINEERING
Professional Field: 5.13. GENERAL ENGINEERING
Specialty: DIGITAL ENTREPRENEURSHIP AND HIGH TECHNOLOGY
Educational-qualification degree: BACHELOR

LEARNING COURSE DESCRIPTION

1. Course title: *CLOUD COMPUTING*
2. Course code: B.45.052.3
3. Type of the course: *Facultative*
4. Level: *Bachelor*
5. Year of study: *Third*
6. Semester: *Fifth*
7. Number of credits: *3*
8. Name of the lecturer: *Assist. Prof. eng. Strahil Sokolov, PhD*
9. Course learning outcomes:

1 *The aim of the course* is The aim of the course is to provide students with an overview of the field of cloud computing, the underlying technology stack, their building blocks and practical experience through projects using public cloud infrastructure (Amazon Web Services (AWS) and Microsoft Azure) and private cloud resources of the University of Telecommunications and Posts.

2 Students who have completed their training in the course must acquire:

3 *Basic knowledge* of the cloud computing concept; the application of fundamental approaches in cloud infrastructure; approaches for building and deploying cloud applications that are highly available, resilient and cost-effective; the virtualization of systems, network and data storage and their role in building the model of cloud computing; basic concepts for cloud storage and demonstration of their use in public and private cloud storage systems; analysis of various cloud models, creating your their own cloud environment and application of cloud computing to solve business cases of different nature.

4 *Practical skills* for for implementing components of cloud computing, its history, technological review, benefits, risks and economic motivation for cloud transformation. Competencies: practical skills for working with public cloud service providers, skills for installation and maintenance of private cloud components.

5 *Competencies:* concept understanding and skills to perform practical tasks with public cloud service providers, skills for installation and maintenance of private cloud components.

1 **10. Teachingmethods:**

The method of teaching is through lectures, block or one lesson per week for 15 weeks and practical exercises in block or one lesson per week for 15 weeks.

11. Prerequisites:

Students should have a thorough knowledge of the Programming basics, Computer architectures and Computer networks.

Courses using the discipline are Blochein Technologies, Software Development, Information security management systems.

12. Course contents:

The course focuses on Introduction to cloud computing is studied in the course. Components of cloud infrastructures and services. Differences between cloud computing models: public, private and hybrid cloud. Categorization of cloud services. Implementation of cloud services. Determination of criteria for introduction of cloud services. Operation of a software delivery model as a service: Software as a Service (SaaS). Comparison of models for delivery of cloud services. Components and technologies of the SaaS model. Deployment of web applications and implementation of web services. Delivery of a platform as a service - Platform as a Service (PaaS). Technical characteristics of PaaS. Main components of the PaaS model. Development of a service with available business components. Management of a cloud storage platform Management of cloud computing support services. Monitoring of cloud services. Deployment of infrastructure as a cloud service: Infrastructure as a Service (IaaS). Technologies and tools for creating manageable scalable server clusters. Tools for configuration and management, maintenance and monitoring of the cloud infrastructure service. Security policies, high reliability and the definition of disaster recovery strategies. Cloud integration with existing applications.

13. Bibliography

Basic literature:

1. **Bitcoin and Cryptocurrency Technologies**“, http://bitcoinbook.cs.princeton.edu/.
2. **Metheny, Matthew.** Federal cloud computing: The definitive guide for cloud service providers. Syngress, 2017.
3. **San Murugesan, Irena Bojanova,** „Encyclopedia of Cloud Computing“ John Wiley & Sons, Aug 1, 2016.
4. **Rittinghouse, John W., and James F. Ransome.** Cloud computing: implementation, management, and security. CRC press, 2016.

Additional literature:

1. **Sastry, V. V. L. N.** Cloud Computing Economics For Information Technology industry. Idea Publishing, 2020.
2. **Furht, Borivoje, and Armando Escalante.** Handbook of cloud computing. Vol. 3. New York: Springer, 2010.
3. **Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski,** Eds. Cloud computing: Principles and paradigms. Vol. 87. John Wiley & Sons, 2010.

14. Assessment methods and criteria:

The course ends with an *ongoing assessment.*

1. Requirements for the assessment of the six-point system

The total number of points from the written exam that can be reached is 100. Each of the questions in the final exam carries 3 points, and the answer to the open question can carry up to 10 points.

2. Formation of the final mark

The formation of the final grade is carried out on the basis of a point system as the maximum number of points that students can receive is 100 and can include various activities. Forming an assessment in the training course at each of the above stages, according to the points obtained and their ranking according to the six-point system is given in Table 1.

Table 1.

Number of points	**Assessment According to the 6-point Scale System**
0 – 20	Fail 2 **(**F)
20 – 39	Fail 2 (FX)
40 – 49	Satisfactory 3.00 (E)
50 – 59	Satisfactory 3.00 (D)
60 – 69	Good 4.00 (C)
70 – 84	Very good 5.00 (B)
85 – 100	Excellent 6.00 (A)

15. Language of instruction: *Bulgarian*