

**REPUBLIC OF UZBEKISTAN**  
**MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION**  
**ANDIJAN INSTITUTE OF MECHANICAL ENGINEERING**

Registered:  
No. 947  
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**"I CONFIRM"**  
On academic work vice rector of the  
university S. Aliyev  
2022 years " " "

**CLOUD TECHNOLOGIES AND DATABASE**  
**WORKER OF SCIENCE TRAINING PROGRAM**

Field of knowledge : 300,000 – Production and technical sector  
Field of study : 330000 – Computer technologies and informatics  
Field of study : 5330200 – Information systems and technologies  
(by networks)

General education hour		248 hours	5th semester	6th semester
That's it including :				
Lecture	–	64 hours	32 hours	32 hours
Practical training	–	64 hour	32 hours	32 hours
Laboratory exercises	–	-	-	-
Independent education hour	–	120 hours	60 hours	60 hours

Andijan - 2022

curriculum of science was **reviewed** and approved **in** the minutes of the meeting of the Scientific Council of the Andijan Institute of Mechanical Engineering dated " \_\_\_\_ " \_\_\_\_\_ , 2022.

The working curriculum of the Andijan Institute of Mechanical Engineering is educational **and** methodological It was approved by the statement of the Council of Ministers No. " \_\_\_\_ " dated " \_\_\_\_ " \_\_\_\_\_ , 2022 .

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## **I. \_ Relevance of educational science and its role in higher professional education**

One of the main subjects of the information technology field is Cloud technologies and database science. The main goal of cloud technologies and database science is to form students' knowledge about cloud technologies and database-based services. In the near future, cloud technologies and database-based services will be the most acceptable alternative to installing hardware and software. At the end of the course, students study current cloud technologies and database-based services and their differences from previous services, make a comparative conclusion, and develop a new cloud-based technology and database service.

### **II . The purpose and tasks of educational science i**

**The purpose of teaching the subject** is to install and configure the existing instruments and applications for students to create programs for mobile devices in creating different from services use and setting, abstract and anonymous from classes use, mobile in applications program work efficiency increase, knowledge, **skill** and skill formation.

**The task of the subject** is to teach students the theoretical foundations of cloud technologies and databases, the basic concepts and categories of cloud technologies and databases, economic laws and principles, and to create the ability to apply them in practice.

**The following requirements are set for the knowledge, skills and qualifications of students in science :**

**The student should know:**

- able to understand the basic concepts of cloud technologies and database theory;
- understand the basic concepts used in cloud technologies and database applications;
- they can use cloud computing knowledge to analyze the problem, formulate a solution and find its solution in cloud technologies and database computing processes;
- they can learn how concepts appear in the theory and applications of cloud technologies and databases ;

### III . M lecture classes

Table 1

No	M lecture topics	Size of lesson hours
<b>5th semester</b>		
<b>1</b>	<b>Organization of cloud technologies</b>	<b>2</b>
1.1.	Development of cloud technologies in Uzbekistan.	
1.2.	Services provided by cloud infrastructure .	
1.3	The process of emergence of cloud technologies.	
<b>2</b>	<b>Creation and models of cloud technology</b>	<b>2</b>
2.1.	ActivePlatform innovative design IT services and service management in the field of Internet products	
2.2	Introduction of a single platform for providing all cloud service services	
<b>3</b>	<b>Cloud computing</b>	<b>2</b>
3.1.	Cloud computing	
3.2.	The development of cloud computing on a global scale	
<b>4</b>	<b>Principles of cloud computing ecosystem development</b>	<b>2</b>
4.1.	A cloud ecosystem	
4.2.	SLA-based cloud computing organization features	
4.3	Cloudy pyramid	
<b>5</b>	<b>Advantages and disadvantages of cloud technologies</b>	<b>2</b>
5.1.	Advantages of using cloud technologies	
5.2.	Disadvantages of using cloud technologies	
<b>6</b>	<b>Cloud service provision</b>	<b>2</b>
6.1.	Private cloud	
6.2.	Community cloud . Public cloud. Learning to organize a cloud education system	
<b>7</b>	<b>Effective organization and management of cloud infrastructure components</b>	<b>2</b>
7.1.	Storage of information from cloud infrastructure components	
7.2.	Amazon S3, rental of virtual servers, provision of computing resources	
7.3.	Amazon EC2. Amazon S3 online web service	
<b>8</b>	<b>Cloud infrastructure modeling</b>	<b>2</b>
8.1.	Cloud infrastructure modeling	
8.2.	Imitation approaches	
8.3.	Simulation models in the study of complex systems	
<b>9</b>	<b>Implementation of effective configuration of resources within SLA</b>	<b>2</b>
9.1.	SLA (Service Level Agreement)	

9.2.	Quality of service Organizational control	
10	<b>A method of effective organization of network resources in cloud infrastructure</b>	<b>2</b>
10.1.	Load balancing (load balancer) located in the cloud system.	
10.2.	Load balancing a number of computing resources on computers	
10.3.	load sharing between computers, networks, central processors or disks	
11	<b>Oracle VM VirtualBox software</b>	<b>2</b>
11.1.	Concept of virtuality	
11.2.	Current reality in the world	
11.3.	Dolzarb issues and the need to effectively solve them	
12	<b>Service models and key delivery providers</b>	<b>2</b>
12.1.	(SaaS) – software as a service	
12.2.	SaaS type provider	
13	<b>Cloudy in technologies there is threats and to them against to fight mechanisms analysis</b>	<b>2</b>
13.1.	Cloud management and control are key security concerns	
13.2.	All resources in cloud technologies	
14	<b>Hardware and software tools in cloud technologies, their application and application</b>	<b>2</b>
14.1	Basic confirmation of hardware interruptions	
14.2	Processing of confidential information in corporate networks	
14.3	Advantages of using hardware	
15	<b>Comparative analysis of information threats and methods of combating them in cloud technologies</b>	<b>2</b>
15.1	Functional attacks on cloud elements.	
15.2	This type of attack is common security with multi-layered cloud	
15.3	Protection against functional attacks	
15.4	DoS - providing effective protection against attack	
16	<b>Features of cloud technology</b>	<b>2</b>
16.1	Cloud technology models and the process of emergence	
16.2	Cloud technologies.	
16.3	The importance of "virtualization" technologies in the emergence of cloud computing	
17	<b>Features and capabilities of Google Drive</b>	<b>2</b>
17.1	(Google Drive is a cloud hosting where files can be stored	
17.2	An overview of the Dropbox application	
18	<b>Mobile training. M-learning</b>	<b>2</b>
18.1	Organization of independent education in M-learning	
18.2	Effective organization of independent education.	
19	<b>The purpose and tasks of the science "Database</b>	<b>2</b>

	<b>management systems".</b>	
19.1	The purpose and tasks of science.	
19.2	Understanding of data bank.	
19.3	Database components	
19.4	The database is the core of the data bank.	
20	<b>Informational aspects of the management system</b>	<b>2</b>
20.1	Information aspects of the management system of the organization	
20.2	The process of information movement and re-formation	
20.3	The work structure of the management system	
21	<b>The methodology of constructing an infological model</b>	<b>2</b>
21.1	Structure of processes and their composition in MBs	
21.2	Database and its structure.	
21.3	MBiniz design stages	
22.4	MBi creation processes.	
22	<b>Methodology of constructing an infological model</b>	<b>2</b>
22.1	Information is a general understanding of the logical model	
22.2	Sample MAMM. Information object of the subject area.	
22.3	Information objects	
22.4	Information object structure.	
23	<b>Organizational work in creating a database</b>	
23.1	Organization of data in the machine environment has two stages - logical and physical	
23.2	A method of placing data directly on the machine carrier	
23.3	Organization of data using modern application programs	
24	<b>MB structure and classes</b>	<b>2</b>
24.1	Classes of databases	
24.2	Structure of centralized databases	
24.3	Learning distributed databases	
24.4	File-server and Client-server technologies.	
25	<b>A general definition of relational MBBT</b>	<b>2</b>
25.1	Relational model data structures	
25.2	Relational tables	
25.3	Domain and tuples	
25.4	Definition and basic concepts	
26	<b>Database design in MBBT environment</b>	<b>2</b>
26.1	Independent information array	
26.2	Database	
26.3	A database that is used by one person and many people	
26.4	Tools for organizing and maintaining the information base inside the machine	
27	<b>Database design in MBBT environment based on inventory files</b>	<b>2</b>

27.1	In the relational database of the data, the scheme should also be structured	
27.2	Structured information depends on the appearance of relationships	
27.3	Semantic information is the relationship expressed in the schema	
28	<b>Database in MBBT using hierarchical model design</b>	<b>2</b>
28.1	Network and hierarchical data model.	
28.2	Data structure in models	
28.3	Relationship of objects in models	
29	<b>Creating a MB using a relational model</b>	<b>2</b>
29.1	Work with tables	
29.2	Identify key fields	
29.3	Database normalization	
30	<b>Basics of SQL query language</b>	<b>2</b>
30.1	SQL query language concept	
30.2	Basics of SQL query language	
30.3	Structure of SQL queries	
31	<b>Implementation of relational model in MS ACCESS MBBT environment</b>	<b>2</b>
31.1	Access data type	
31.2	Work with tables	
31.3	Constructor tables window	
32	<b>Implementation of relational model in MS ACCESS MBBT environment</b>	<b>2</b>
32.1	Determining the areas to be counted	
32.2	Creating complex queries	
32.3	Creating forms for data entry	
32.4	Automated creation of forms using a table or query	
<b>Total:</b>		<b>64</b>

M lecture sessions are held in an auditorium equipped with multimedia installations for a stream of academic groups.

#### IV . Practical training

Table 2

<b>T/r</b>	<b>Topics of practical training</b>	<b>Size of lesson hours</b>
<b>5th semester</b>		
1	Subject area analysis. Defining requirements in services.	<b>4</b>
2	MBi creation processes.	<b>4</b>
3	Development of a comparative table of cloud services.	<b>4</b>
4	MB models.	<b>4</b>
5	Moving data from one place to another in the "Cloud" .	<b>4</b>
6	Choosing a virtualization solution.	<b>4</b>
7	File-server and Client-server technologies.	<b>4</b>
8	"Cloud" with mobile devices.	<b>4</b>
<b>6th semester</b>		
9	The concept of developing a new service based on cloud computing.	<b>4</b>
10	.Development of new cloud computing based service using IBM Cloud, Windows Azure, Amazon Cloud and other platforms.	<b>4</b>
11	.Designing an MB	<b>4</b>
12	.Searching for on-demand online Cloud computing services.	<b>4</b>
13	stages .	<b>4</b>
14	.Implementation of cloud services.	<b>4</b>
15	.Relational models of MB, basics of relational models.	<b>4</b>
16	.Classes of databases.	<b>4</b>
	<b>Total:</b>	<b>64</b>

Practical classes are held separately for each academic group in an auditorium equipped with multimedia facilities. Classes are conducted using active and interactive methods, "Case-study" technology is used, the content of the cases is determined by the teacher. Visual materials and information are transmitted using multimedia structures.

### **V. Laboratory exercises**

Laboratory training in this subject is not provided



## VI. Independent education

Table 3

No	Independent study topics	Size of lesson hours
<b>5rd semester</b>		
1	Google Cloud system	4
2	iCloud system	4
3	Mail.ru cloud	4
4	Microsoft One Drive system	4
5	AWS cloud service	4
6	MEGA cloud service	4
7	Cloud.uz service	4
8	Microsoft Azure	4
9	Yahoo service	4
10	Amazon cloud service.	4
11	Organizational work in creating a database.	4
12	A general definition of relational MBBT. Language tools.	4
13	Database design in MBBT environment.	4
14	Database design in MBBT environment based on inventory files.	4
15	Database Design in Hierarchical MBBT.	4
16	Implementation of relational model in MS ACCESS MBBT environment	4
<b>Total:</b>		<b>64</b>

It is recommended to prepare abstracts and present them by students on subjects to be mastered independently.

**Coursework in this subject is not provided for in the curriculum of the field of study**

## VII. Criteria for monitoring and evaluating student knowledge in science

Monitoring and evaluation of students' knowledge of subjects at the Andijan Institute of Mechanical Engineering in accordance with the Decree of the President of the Republic of Uzbekistan dated June 5, 2018 No. in accordance with the decision of the Minister of Higher and Secondary Special Education of the Republic of Uzbekistan dated August 9, 2018 No. 19-2018 It is carried out on the basis of the "Regulation on the control and evaluation system of students' knowledge in higher education institutions", approved and registered by the Ministry of Justice of the Republic of Uzbekistan on September 26, 2018 with No. 3069.

<b>Evaluation methods</b>	Oral <b>survey</b> , test , <b>interview</b> , <b>control work</b> , <b>homework check</b> , written work, presentations and other similar forms.		
<b>B population criteria</b>	<p><b>5 - "Excellent" grade</b>  - The student makes independent conclusions and decisions;  - can think creatively;  - conducts independent observation;  - can apply the acquired knowledge in practice;  <b>essence of science (topic) and</b> when it is considered that he has an idea about science (topic) - he is evaluated with 5 (excellent) grade .</p> <p><b>4 - "Good" grade</b>  - The student observes independently;  can <b>apply</b> the acquired knowledge in practice ;  <b>essence</b> of science (topic) and when it is considered that he has an idea about science (topic) - he is evaluated with 4 (good) grade.</p> <p><b>3 - "Satisfactory" grade</b>  can <b>apply</b> the acquired knowledge in practice ;  - understands, knows, can express, tell the essence of science (topic) and when it is considered that he has an idea about science (topic) - he is evaluated with 3 (satisfactory) grade.</p> <p><b>2 - "Unsatisfactory" grade</b>  - When it is considered <b>that the student has not mastered</b> the science program , does not understand the essence of the science (topic) and does not have an idea about the science (topic) - he is evaluated with a grade of 2 (unsatisfactory).</p>		
	<b>Types of assessment</b>	<b>Max. price</b>	<b>Transfer and q ti</b> —

	<p><b>Intermediate control</b> Intermediate control (conducting the ON type <b>and evaluating</b> the student's knowledge according to <b>this type of control</b> is carried out by the professor - <b>teacher</b> who conducted the training in the subject ) .</p> <p>- <b>term control</b> is held during <b>the semester after</b> the completion of the relevant section of the work science program in order to assess the student 's knowledge and practical <b>skills</b> . Depending on the nature of the subject, the type of <b>midterm examination can be conducted</b> up to 2 times, and the form and duration of the <b>examination</b> are determined by the department based on the nature of the subject and the hours allocated to the subject. When evaluating a student according <b>to</b> the type of interim control, the grades he received during the training sessions are taken <b>into account</b> .</p> <p><b>was</b> evaluated with a "2" (unsatisfactory) grade for this control type will not be included in the final control type.</p>	5	9-16 _ week
	<p><b>Final control</b> Conducting the final control type <b>and evaluating the student 's</b> knowledge on this type of control is carried out by a professor-<b>teacher who</b> did not conduct the training .</p> <p>The form of conducting the final inspection <b>is</b> determined based on the nature of the subject, hours allocated to the subject.</p>	5	18-19 weeks
	Written work, oral , test, etc	5	

## VIII. Basic and additional educational literature and information sources

### Basic literature

1. Cloud technologies. Study guide. TEDelov. -Tashkent: 2020 -217 p.
2. Patrick Niemeyer, Daniel Lake Learning Java / 2014.
3. Cruz Zapata . Android Studio Essentials Belén 2013.
4. Ted Hagos. "Learn Android Studio 3 with Kotlin " 2015 .
5. J. Zdziarski. " iPhone SDK Application Development". Saint Petersburg. 2010.

### **Additional literature**

1. Android Programming Tutorials 2013.
2. Adam Sinicki. Learn Unity for Android Game Development 245 pages
3. *Matt Neuburg* . iOS 12 Programming Fundamentals with Swift

### **Internet sites**

1. <https://intuit.ru/studies/courses/493/349/lecture/8337>
2. <https://www.fandroid.info/>
3. <https://developer.android.com/>
4. <https://covde.oksei.ru/user/view.php?id=5&course=167> – for Android
5. <https://www.w3schools.com/java/default.asp> – website about **programming languages**
6. <https://udacity.com> . - online platform

