Report on scientific activities of the Department of Information technology and security for the 2nd half of 2019

1.   Research works performed

1) name of the topic-**Development of methods and tools for process management of a mining enterprise based on big data analysis and OLAP systems**
The basis for the implementation Plan of scientific activities НИЛ_22
Scientific supervisor-doctor of technical Sciences, Professor Yavorsky V. V.

Main results:
We have developed a data warehouse with a multi-level automated model for planning technological processes, generating budget forms and reports on work execution, as well as a detailed digital model for technological processes of mining enterprise divisions.
Attracting students and undergraduates: when developing software systems – 25 students.
A monograph (item 2.1) on the organization of data warehouses for project management and multidimensional data analysis has been published.
Published 1 article in the journal KKSON (p. 2. 3, no. 1).
3 reports were presented at the international scientific and practical conference "Informatics and applied mathematics" (p. 2. 4, no. 2-4).
Implementation of results in the educational process:
Implementation of 10 course projects.

2) name of the topic-Computer **modeling of physical processes**
The basis for the implementation Plan of scientific activities НИЛ_22
Scientific supervisor-candidate of technical Sciences, associate Professor danenova G. T..
Main results:
A numerical procedure for solving the thermodeformational problem when welding products with modulated current has been developed, and experiments have been conducted. Development of a methodology for studying thermodeformational processes in welding in the environment of the ANSYS computer system.
Attracting students and undergraduates: when developing software models – 25 students;
Published 1 article in the journal KKSON (p. 2. 3, no. 9).
2 articles were prepared and submitted to the CCSON journals (p. 2. 2, no. 1-2).
Implementation of results in the educational process:
Implementation of 9 course projects.

2. Publication of research results
2.1 Monographs
1. Kalimoldaev M. N., Utepbergenov I. T., Yavorsky V. V., Akhmediyarova A. T., Klyueva E. G., Organization of data storage for Smart systems of urban public

transport-Almaty: Institute of information and computing technologies, KN MES RK, 2019.

№ п/п	Full name of the author (s)*	Article title	Country, magazine name, issue, year	The impact factor of the journal
1	Atanov S. K. (the side),	Development and simulation of the optimal LQG controller for controlling the grinding process	Kazakhstan,	Kizb - 0.009
2	Bigalieva A. Z.	Building a Kalman filter to restore missing information about the state of the grinding process in a planetary mill	""Bulletin Of KazNTU»	The KSC - 0,052

Total prepared articles, total -2, of which: in rating journals-2

D/W –

CIS –

RK-2, including KSTU-1

Students / with students –

Graduates / undergraduates with –

Doctoral students / doctoral candidates -

2.3 Published articles in journals

№ п/п	Full name of the author (s)*	Article title	Country, magazine name, issue, year	The impact factor of the journal
1.	Kokkoz M. M.,	Automated information system and On-line control	Kazakhstan, "Bulletin of the Shakarim state University of Semey", No. 1, 2019	RISC-
2.	Akzhanova A. A. (master's degree in ISM-17-3)	Monitoring the quality of educational activities and its application to the training of school graduates	Kazakhstan, Automation and Informatics, No. 2, 2018	Kizb - 0.009
3.	Abeuova E. E., (master's degree in ISM-17-4)	Low-resource cryptography algorithms for the Internet of things	Kazakhstan, "Bulletin of the Shakarim state University of Semey", No. 1, 2019	Casbs - 0,057
4.	Isagulov S. T.	Analysis of problems in scheduling classes in educational institutions	Kazakhstan, "Bulletin of the Shakarim state University of Semey", No. 1, 2019	Kizb - 0.009
5.	Atanov S. K. (stor),	Low-resource cryptography algorithms for the Internet of things	Kazakhstan, "Bulletin of the Shakarim state University of Semey", No. 1, 2019	Kizb - 0.009
6.	Tilak B. E.	Research of methods and algorithms for testing E-commerce platforms under high loads	Kazakhstan, Proceedings Of The University, No. 2, 2019	Kizb - 0.009
7.	Beisenbekova F. K.	Analysis of problems in scheduling classes in educational institutions	Kazakhstan, "Bulletin of Semey state University named after Shakarim", no. 2, 2019	Kizb – 0.009
8.	(master's degree in ISM-17-4)	Personal data protection		Kizb – 0.009
9.	Danenova G. T.	Choosing a strategy for automating Web application testing	Kazakhstan, "Bulletin of Semey state University named after Shakarim", no. 2, 2019	Kizb – 0.009

5. Academic degrees, titles, and election to the Academy of Sciences

and awards received by the faculty and employees of the Department-no

6. Participation in competitions for R & d financing-not available

7. Results of scientific work on cooperation agreements

with organizations in Kazakhstan-no

8. Results of scientific work within the Corporate University

Department of ITB has partnered with venture LLP <EPAM system>.

Under the leadership of the head of the ITB Department, M. M. Kokkoz, a training laboratory "Information technologies - epam" was created at the ITB Department. Currently, students and undergraduates of the ITB Department are undergoing training at the laboratory of <EpamSystem > LLP.

During the reporting period, 2 field meetings were held. The following issues were discussed:

1. Discussion of training content in the EPAM Systems laboratory.

2. Involvement of leading EPAM specialists in the educational process at KSTU.

3. Providing a place in the company of EPAM Kazakhstan LLP for passing production and pre-graduate practices of students of the specialty 5B070400 – "Computer equipment and software", 5B100200 - "information security Systems".

4. Conducting classes at the branch of EPAM Systems.

9. Results of scientific work on projects and contracts

on international cooperation Collaboration with ITASCOgroup, (Toronto, Canada).

Within the framework of joint research in the field of information technology, a model of a three-dimensional object using welding sources was developed and experiments were conducted.

10. Scientific work with students and undergraduates

As part of the research work of students, 50 students and 4 undergraduates are involved, and 19 term papers have been completed. The students participated in the competition "Hackathon".

Within the framework of the group "Mathematical modeling of processes and complex systems", computer modeling of systems is considered, two-dimensional models are studied. (Leaders: Danenova G. T.).

Within the framework of the circle "three-Dimensional graphics and animation", an in-depth study of the subject is conducted, modern means of graphics are studied, and three-dimensional models are built in various ways. (Head Of Kan O. A.).

In the framework of the circle " Information and communication technologies "(nauchn. hands'. - Kokkoz M. M.) modern programming technologies are considered, software is created for various subject areas.

Activities for the development of students ' NIRS:

From 24 to 27 October 2019 the international forum Terricone valley was held in Karaganda IT-WEEK.KZ 2019.

As part of the forum, a hackathon was held with a prize Fund of 1,000,000 tenge.

According to the results of the hackathon, students of the ITB Department took all 3 prizes.

1st place was taken by the Road Guard team, which included Ekaterina Kazantseva (group VT-16-4), Eugene Kim (group VT-16-4), Eugene Demchenko (group VT-16-4). The main prize was 500,000 tenge.

The 2nd place was taken by the team "Clean City", which included Deepner Boris (group SIB-19-4) and Davydova Arina (group VT-18-1), receiving a prize of 300,000 tenge.

The 3rd place was taken by the team "Garbage Collector" which included Nikita stolpovsky (group VT-16-4), Shorin Alikhan (group VT-16-4). The children received a prize of 200,000 tenge.

On November 15 and 16, 2019, the innovative Hackathon marathon was held at the Buketov Karsu. The marathon was organized by SEC "Saryarka" with the support of the regional Department of industry and innovative development.

This year, industry and agriculture were chosen as topics.

Students of the ITB Department Shorin Alikhan (group VT-16-4), Nikita stolpovsky (group VT-16-4), Boris Dipner (group SIB-19-4) took part in the hackathon, presenting an automated system for monitoring gas leaks using Big Data technologies, business Analytics, machine learning and Arduino microcontrollers.

According to the results of the defense of their project, the guys took 2nd place with a prize Fund of 300,000 tenge.

11. Implementation of the University's Comprehensive development program for 2019

In this section, note the planned and actual indicators for all tables of Applications related to scientific activities, with a note of the reasons for non-fulfillment and the timing when the debt will be eliminated.

Head of ITB Department_____ **Kokkoz M. M.**

Head of the laboratory _____ **Danenova G. T.**