

Implementation of PFUR Strategic Development Program in Department of Oil-field Geology and Mining Engineering

Peoples' Friendship University of Russia

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This paper presents the operating results of the department of Petroleum Geology and Mining Engineering (PGMPE) aimed at engineering education development. It also describes the activities held in the framework of Strategic Development Program (SDP).

Key words: medium-term development program, educational activities, research activities, international activities.

The aim of the article is to analyze and find further prospects for petroleum education by comparing the indicators of an ideal department with the real department's indicators.

The objective of the article is to show possible ways of development for Petroleum and geological departments using the example of the department of Petroleum Geology and Mining Engineering (PGMPE).

In the XXI century the approach to the higher engineering education changed considerably all over the world. It has become more practice-oriented and allows graduates to get into production process without additional training period.

Different engineering universities use different ways to ensure this need.

People's Friendship University of Russia (PFUR) is the unique educational institution not only in Russia but also among more than 17000 higher education institutions in the world. The main strategic goal of the University is to form the global elite for the economy, science and culture of Russia and other countries of the world in terms of pursuing the RF geopolitical and economical interests

through the export of the educational services. This aim determines the Corporate Policy and is implemented in the framework of the strategic development program (SDP) of PFUR for the period of 2012-2015 [4].

The program includes the following directions [4]:

1. Education process improvement by increasing the number of Master Degree programs in foreign languages and training quality level as well as by conducting other activities in the framework of international collaboration.

2. Improvement of research and innovative activities, which includes [4]:

- Development of research work/student research work (RW/SRW) infrastructure;
- Development of the incentive system to encourage research, innovative and publication activity of the faculty and recognition of PFUR at the federal and international levels (including the development of a support system for prior fundamental and applied research in natural, mathematical and technical sciences based on research and education centers and labs of PFUR).



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3. Human resource development and development of the best school leavers selective system, which means making conditions for human resource development and optimal average age maintenance, attracting talented Russian and foreign students by means of different kinds of competitions and conferences.

4. Infrastructure modernization implying the improvement of working conditions both for the students and the faculty.

5. Development of the effective management system in PFUR, in terms of which the restructuring, human resources optimization, personnel distribution and faculty competence development are carried out.

Reaching the planned indicators of the SDP will double the existing indicators (Fig. 1)

The PGMPE department of engineering faculty (PFUR) takes an active part in SDP. It attracts a lot of new students giving career guidance in schools. It also delivers courses for more foreign students: there is a group of 9 Chinese students from Xian Oil University who study Russian oil and gas terminology. The department faculty develops teaching materials. In 2013 it edited a workbook «The current state of the Russian oil and gas industry» approved by the Board of Educational Methodical Association (BEMA) in applied geology, specialty 130101.3 «Petroleum geology». There is also a new laboratory with a drilling

simulator «Transas Shelf 6000 Drilling Simulator» and a simulator designed to conduct research and training related to the rescue operations - PISCES II.

As of 01.01.2014 it is possible to distinguish the following aspects of the SDP development of the department (Table 1, 2) [1-3]

There were 12 research works (fundamental and applied ones) conducted at the department from 2009 to 2013 for a total amount of 29 millions of rubles. Besides, there were 3 grants under the Federal Target Program (FTP). They were conducted by post-graduates.

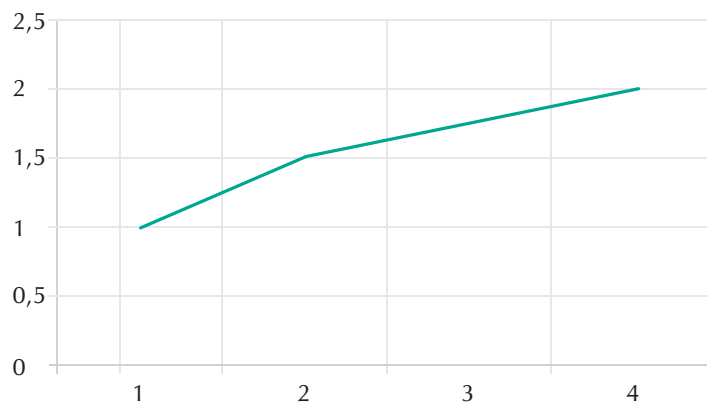
No less than 50% of the whole grant pay-roll was paid to young scientists, postgraduates and students.

Thus, there were 119 participants under 35 years old who participated in scientific research projects. They are 49 students, 43 post-graduates, 7 young faculties, 21 PhDs and 3 external PhD students. They earned about 10 millions rubles. The average number of participants in the research projects is the following – 5.4 students, 4.4 postgraduates, 1.4 young scientists and 3 PhDs under 35 years old.

These are the research projects conducted in the department:

010511-1-173 «Innovative geotechnologies of oil shale development and high viscosity oil field development», 2009, (the project supervisor is Vorobyev A.E). 3 students, 3 post-graduates and

Fig. 1. Development of Generalized Indicators of PFUR.



1 instructor received 50% of the grant funded salary that is 260486 rubles.

010512-1-173 "Geochemistry of uranium mine spoil heap technogenesis as a base of effective reclamation and recovery of stored mined rock", the project supervisor and performer is Chekushina E., a post-graduate. The project was conducted in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013. (State contract № П1689 dated 03.09.2009) – 445 000 rubles.

010513-2-073 " Development of effective exploration methods and methods for environmentally friendly development of gas hydrate fields, lake Baikal, Teletskoye lake (Russia) and Issyk Kul lake (Kyrgyzstan)", the project supervisor is Vorobyev A.E, D.Sc. in engineering, professor. The project was conducted in 2009-2011 within the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № П1405 dated 03.09.2009). 11 students, 4 postgraduates and 2 young PhDs under earned 50% of the grant funded salary that is 1369365 rubles.

010514-2-073 "Environmentally friendly oil shale reservoir engineering", the project supervisor is Gladush A.D. PhD in engineering, associate professor. The project was conducted in 2009-2011 within the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № П1436 dated 03.09.2009). 8 students, 4 postgraduates, 1 instructor and 1 young PhD under 35 years old received 50% of the grant funded salary that is 873000 rubles.

010515-2-073 "New and recycled power sources based on lithosphere reactor organic-containing wastes recycling into oil-like products", the project supervisor is Gladush A.D. PhD in engineering, associate professor. The project was conducted in 2009-2011 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № П1659 dated 15.09.2009). 4 students,

3 postgraduates, 3 young PhDs under 35 years old received 50% of the grant funded salary that is 654000 rubles.

010516-2-073 "Mining technique of underground manganese leaching from low-grade ore", the project supervisor and performer is Chekushina E., a post-graduate. The project was conducted in 2009-2011 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № П2024 dated 02.11.2009). The salary fund is 550000 rubles.

010517-2-144 "Development of resource-saving technology of controlled natural mineral wastes treatment in U-mines", the project supervisor is Vorobyev A.E, D.Sc. in engineering, professor. The project was conducted in 2010-2012 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № 02.740.11.0681 dated 29.03.2010) 6 students, 8 postgraduates, 6 young PhDs and 2 external PhD students received 50% of the grant funded salary that is 3442613 rubles.

010518-2-074 "Underground coal mining safety improving based on the adaptive techniques for coal mass displacement monitoring", the project supervisor is Pobyvanets V.S., DSc in economics, PhD in geology and mineralogy. The project was conducted in 2010-2012 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № 14.740.11.0642 dated 05.10.2010). 4 students, 6 postgraduates, 1 external PhD student and 3 young PhDs under 35 years old received 50% of the grant funded salary that is 413841 rubles.

0105 19-1-173 (Templan, 2012 year, the supervisor is Vorobyev A.E) – 3 students, 3 postgraduates and 1 young scientist earned 50% of the grant funded salary, which makes 236183 rubles.

010520-1-173 (Templan, 2012 year, the supervisor is Vorobyev A.E) – 3 students, 3 postgraduates and 1 young scientist without academic degree and 2 PhDs under 35 years old earned 50%

Table 1. The Input of the Department into the SDP.

DEPARTMENT FACULTY

Tenured faculty:

- | | |
|---|---|
| 1. Vorobyev A.E. Head of the department, D.Sc. in engineering, professor. | 5. Yankevskiy A.V. PhD in economics, instructor |
| 2. Kipriyanov N.A., D.Sc. in chemistry, professor | 6. Abdulatipov Zh.Yu. Instructor |
| 3. Malyukov V.P. PhD in engineering, associate professor | 7. Sinchenko A.V. Instructor |
| 4. Gladush A.D. PhD in engineering, associate professor | 8. Mastonov R.A. Instructor |
| | 9. Kaukenova A.S. Instructor |

Tenure and Non-tenure tracks:

- | | |
|--|--|
| 10. Kochofa A.G. PhD in geology, associate professor | 11. Chekushina T.V. D.Sc. in economics, PhD. in engineering, associate professor |
| 12. Neguritsa D.L. PhD in engineering, associate professor | |

Hourly-paid faculty:

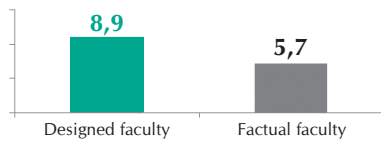
13. Lev A.M. PhD in engineering, associate professor
14. Kapitonova I.L. instructor

Consultants:

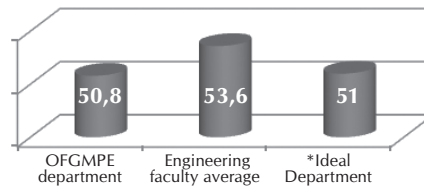
- | | |
|---|---|
| 15. Panin I.M. PhD in engineering, professor-consultant | 16. Mashkovtzev I.M. PhD in engineering, professor-consultant |
|---|---|

GENERALIZED CHARACTERISTICS

Comparison of designed and factual faculty of the department

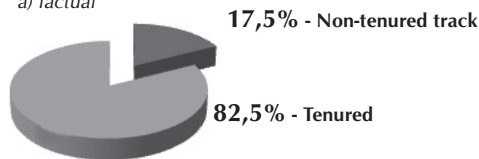


Average age of the faculty, years
* University recommendation

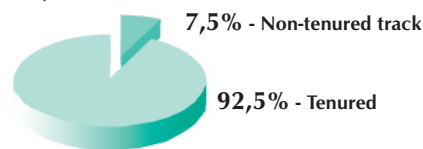


Tenured/Non-tenured track ratio

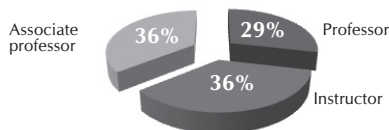
a) factual



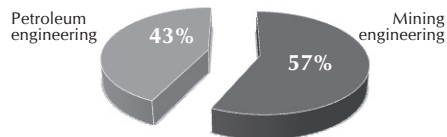
b) planned



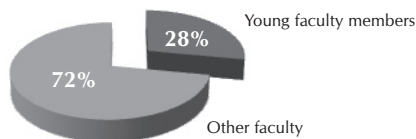
Professor/Associate professor/Instructor ratio



Faculty specialization



Percentage of young faculty (9% of young 's faculty is the university administration recommendation)



Academic degree levels of the faculty, number of people

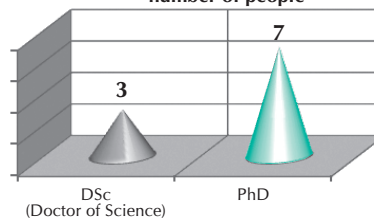
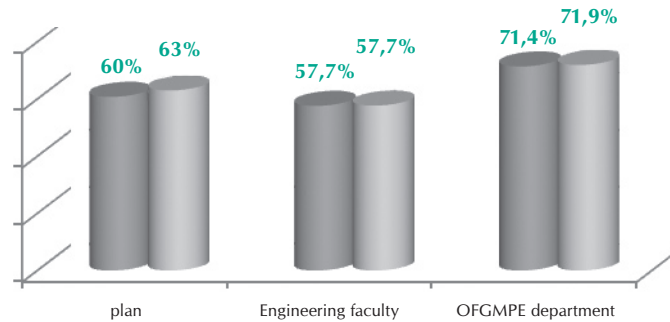


Table. 1. The input of the Department into the SDP.

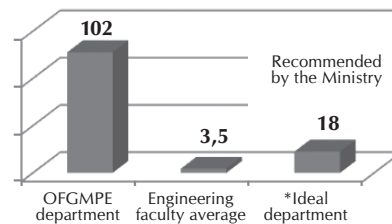
GENERALIZED CHARACTERISTICS

Percentage of the faculty having academic degrees

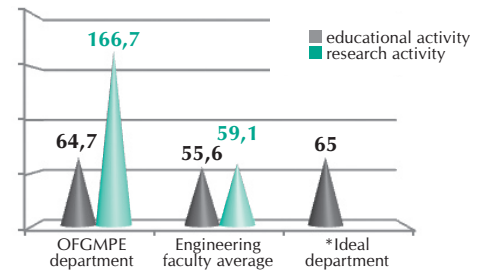


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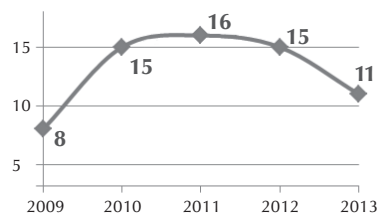
Scientific Research financing, thousands rub./person



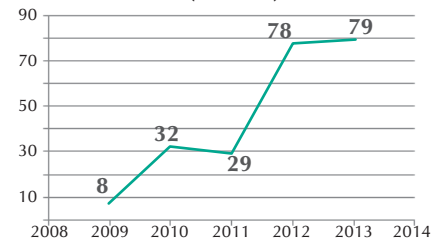
Average salary of the faculty, thousands rubles



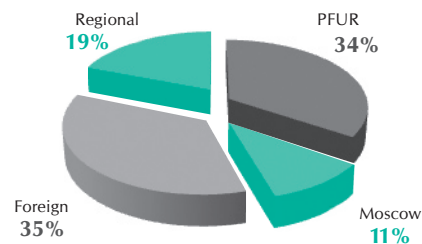
Number of published training materials, books and monographs (total 65)



Number of publications in national journals (total 226)



Publishing houses with the publications of the faculty (2009-2013 years)



Journals with the faculty publications (2009-2013 years)

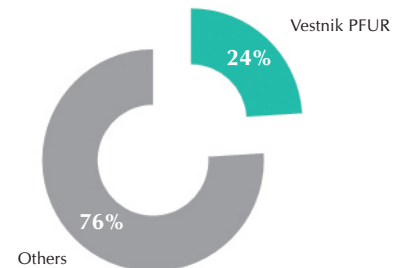
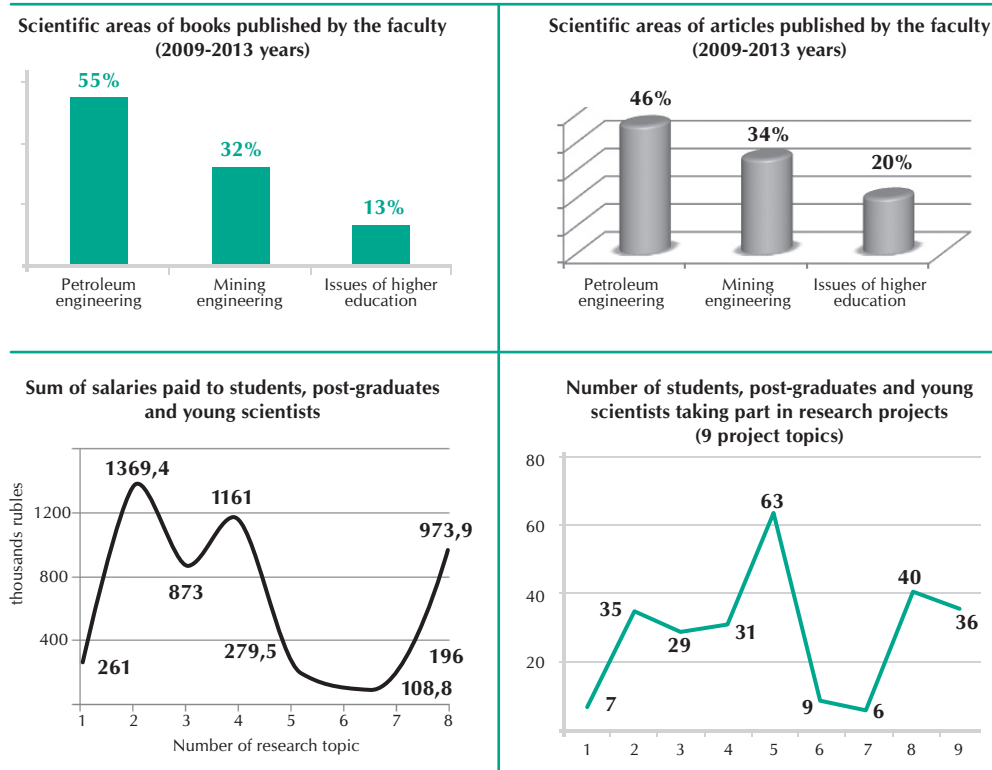


Table 1. The input of the Department into the SDP.

GENERALIZED CHARACTERISTICS



of the grant funded salary, which makes 336900 rubles.

010521-2-074 “Development of innovative methods of methane extraction from natural and technogenic waters based on theoretical and experimental research of hydrogeological basins”, the project supervisor is Vorobyev A.E, D.Sc. in engineering, professor. The project was conducted in 2012-2013 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013, (State contract № 14.B37.21.1254 dated 21.12.2012). 7 students, 6 postgraduates, 1 external PhD student and 4 young PhDs under 35 years old earned 50% of the grant funded salary, which makes 951492 rubles.

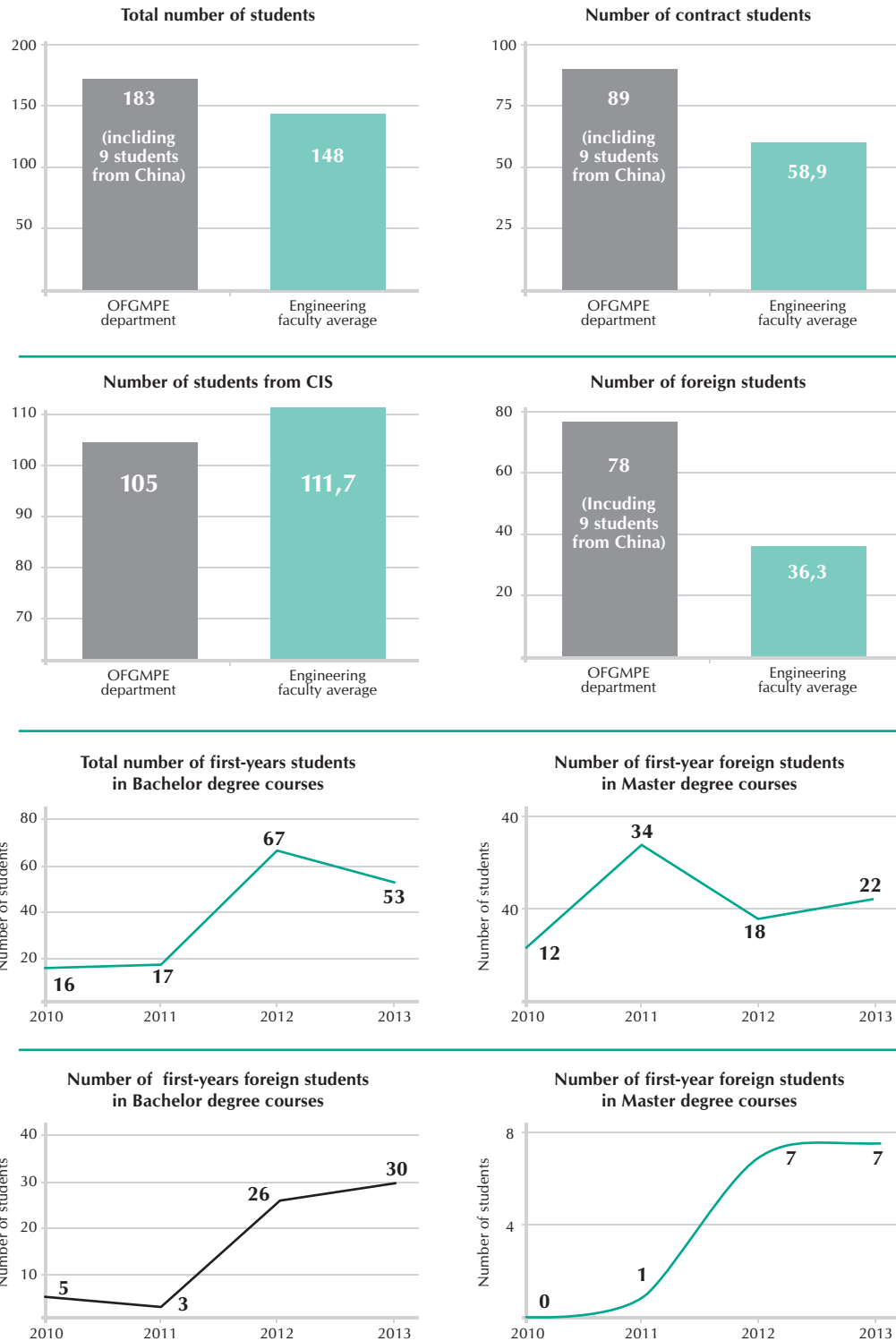
Unnumb. “Research of coal gob piles as pseudo-volcanic features (Contract with the Ministry of education and science of the RF dated 03.10.2012

№4.132.21.1816)”, the project supervisor and performer is Abdulatipov Z.Y., a post-graduate. The project was conducted in 2012-2013 in the framework of the Federal Target Program «Scientific and education personnel for innovative Russia» for 2009-2013; the grant funded salary is 428000 rubles.

Nowadays, at the department there are students from 79 countries (Table 2). The total number of nations and nationalities represented by PFUR’s students is 156. It gives great possibilities for international contacts as well as good foreign language practice. Besides, there is a possibility to obtain a Diploma “Translator in professional activity area”.

During the training course the students have internships on the training testing grounds in Moscow (MGRI-RSGPU, Sergiev Posad) and St. Petersburg (National Mineral Resources University – University of mines). Our students have

Table 2. Characteristics of the students trained at the department.



also internships in leading petroleum universities of German, China, Estonia, Poland, Kazakhstan, Kyrgyzstan, etc, in the leading Russian and international oil and gas companies (Lukoil, Rosneft, etc.) as well as in science and research institutions.

Most part of our bachelors continue their study at the department taking Master Degree program in specialization "Management" that has 3 specialties: "Management in petroleum engineering", "Audit of subsurface use" and "Innovative techniques in subsurface use".

The conditions of the modern labour market make us produce engineers not only with the competencies required by the FSSES (Federal State Educational Standards) but also with some special (additional) competencies (Fig. 2), which are necessary for producing competitive innovative products.

There are some examples of effective development of such competencies:

1. The use of the computer system "Academic portal" that provides a 24-hour access for students to the faculty data base (including lectures, training materials, presentations, etc.);

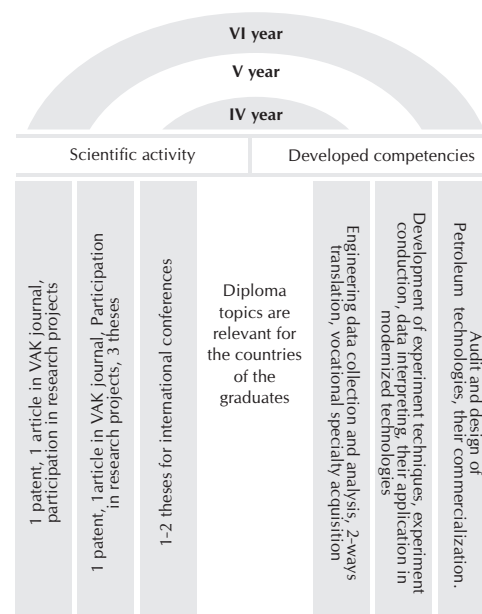
2. The opportunity for students to improve their skills in foreign languages and computer use;

3. The opportunity for the students to take part in international scientific conferences. By now PFUR (the chairman is Vorobyev A.E, D.Sc. in engineering, professor, the head of the OFGMPE department) has conducted 12 international conferences "International Conference on Mining, Mineral processing,

Metallurgical and Environmental Engineering" in Russia (Moscow), Dagestan (Makhachkala), Kazakhstan (Karaganda, Ust-Kamenogorsk), Uzbekistan (Tashkent and Navoi), Kyrgyzstan (Bishkek and Kyzylkiya), Armenia (Erevan), Benin (Africa, Cotonou), Algeria (Algiers), Estonia (Tallinn) and Iran (Tegeran), where more than 5900 scientists and specialists participated in different ways.

4. The opportunity for the students to enhance their educational learning performance through a wide variety of additional professional qualification programs.

Fig. 2. System of additional competencies developed in the course of the programs acquisition.



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