

Ministry of Science and Higher Education of the Russian Federation



Federal State Budgetary Educational Institution of Higher Education  
**Perm National Research Polytechnic University**



**APPROVED BY**

Pro-rector for Academic Affairs

N.V. Lobov

« 18 » 06 2020 г.

**BASIC PROFESSIONAL EDUCATIONAL PROGRAM OF HIGHER  
EDUCATION  
BACHELOR'S COURSE PROGRAM  
GENERAL CHARACTERISTIC**  
*Competency-based model of the graduate (CMG)*

**Training program (degree):** 21.03.01 Oil and Gas Engineering

**Direction:** Oil and Gas Engineering

**Graduate's qualification:** Bachelor's degree

**Form of education:** Full-time

**Time of education:** 4 years

**Graduate Department:** Oil and Gas Technologies

## **Introduction**

Basic professional educational program (BPEP) of higher education – Bachelor’s course program “Oil and Gas Engineering”, developed in accordance with the requirements of PNRPU Institutional Educational Standard of Higher Education in the field of study 21.04.01 “Oil and Gas Engineering” has approved by the decision of the Academic Council of PNRPU from 28.02.2019, minutes № 6 and implemented from 01.03.2019 by the Order of Rector № 16-O from 05.03.2019.

General characteristics of the basic professional educational program, which also includes competency-based model of the graduate (CMG), corresponds the description of educational program provided by the Regulations of arrangement in the “Internet” on the official site of educational institution and refreshment of information about educational institution (approved by the RF Government Regulation from July 10, 2013, № 582).

## Table of Contents

1 Terms, definitions, notations and abbreviations .....	5
2 General characteristics of educational program .....	8
3 Competency-based model of the graduate .....	8
3.1 Characteristic of the graduate's professional activity .....	8
3.2 Passport of BPEP competences.....	10
3.2.1. Intended outcomes of mastering the basic professional educational program ..	11
3.2.2 Table of competences and training courses relationship .....	13
3.2.3 Stages of forming the graduate's competency-based model .....	14
4 Conditions of BPEP realization.....	14
<i>Supplement 1.</i> Indicators of competences attainment .....	18
<i>Supplement 2.</i> <a href="#"><u>Matrix of competences and training courses relationship</u></a> .....	28
<i>Supplement 3.</i> Stages of competences formation .....	31
Recording list of changes .....	32

## 1. Terms, definitions, notations and abbreviations

### 1.1. Terms and definitions

The following terms and definitions have been used in the document:

1.1.1 **Directivity profile of educational program** – orientation of the educational program towards the definite fields of knowledge and (or) activities and determining its subject matter, prevailing types of students' learning activity and requirements for the results of its mastering;

1.1.2 **PRNPU educational standard** – complex of requirements compulsory in all subdivisions of PRNPU participating in development and realization of the basic professional educational programs on the given directivity profile or specialty of higher education;

1.1.3 **basic professional educational program of higher education** – complex of the main parameters of education (volume, contents, intended outcomes), organizational and pedagogical conditions and forms of assessment presented in the form of general characteristic of EP, curriculum, academic time schedule, academic courses working programs (modules), programs of practice, materials of assessment and methodics;

1.1.4 **suggested basic educational program** – educational documentation (suggested curriculum, suggested academic time schedule, suggested academic courses working programs (modules), other components) determining the recommended scope of education of the definite level and (or) the definite field of study, intended outcomes of mastering educational program, suggested conditions of educational activity including approximate estimation of standard costs of rendering public service aimed at educational program realization;

1.1.5 **intended outcomes of mastering educational program** – students' competences determined by educational standard and students' *competences* prescribed by educational program taking into consideration the directivity (profile) of the educational program (in case of such competences determination);

1.1.6 **universal competences** – graduates' competences reflecting society and persons' demands for the cultural and socially-individual qualities of the graduate of higher education program of the corresponding level which involve professional characteristics defining the conformity of the level of education with the national system of vocational qualification;

1.1.7 **general professional competences** – graduates' competences reflecting demands of labor market concerning graduates' mastering the programs of higher education in the field of training general fundamentals of professional activity taking into consideration potential development of the spheres of activity (irrespective of the program directivity to the definite objects of activity or fields of knowledge);

1.1.8 **professional competences** – graduates' competences reflecting the demands of labor market concerning preparedness of the graduate of higher education program of the corresponding level and directivity to fulfill the tasks of professional activity and related labor functions of professional standards for the level of qualification confirmed with profession;

1.1.9 **indicators of competences attainment** – generalized characteristics specifying and uncovering competences statement. Indicators can be presented in the form of

summarized outcomes of learning and in the form of definite actions carried out by the graduate who mastered the given competence. Indicators of competences attainment should be measured by means of recourses available in the educational process.

1.1.10 **outcomes of education** (intended) – knowledge, working knowledge, mastering skills obtained by students after the completion of course leaning (module) or practice;

1.1.11 **professional standard** – characteristic of qualification necessary for definite kind of employee’s professional activity;

1.1.12 **field of professional activity** (of the graduate) – complex of the graduates’ professional activities having the common ground (similar or close purpose, objects, technologies, including means of labor) and expecting analogous set of labor functions and corresponding competences for their fulfillment; it is corresponded with one or several types of business;

1.1.13 **sphere of professional activity** (of the graduate) – segment of professional activity or related fields of professional activity including types of professional activity and characterized by the collection of special objects of professional activity; also the sector (or field) of work which has the definite bounds of application;

1.1.14 **type of professional activity** (of the graduate) – complex of generalized labor functions which can be fulfilled by the graduates and which have the analogous conditions, character and results of work;

1.1.15 **generalized labor function** – complex of interrelated labor functions formed as a result of division of labor in the specific industrial (business) process;

1.1.16 **labor function** – a set of interrelated labor actions aimed at the solution of one or several tasks of work, fulfillment of relatively autonomous and completed part of working process in the frames of generalized labor function;

1.1.17 **working action** – the process of worker’s interaction with the subject of labor when the definite goal is achieved;

1.1.18 **object of professional activity** (of the graduate) – event, subject or process influenced by professional activity. Terms “object” and “subject of professional activity” are considered as the synonyms in professional activity connected with material production. It is necessary to differentiate these notions in the sphere of non-material production connected with research work, creative work and etc. In this case the notion of subject is not the synonym of the object notion, and it involves the properties and relations of the object perception of which is important for the professional tasks solution;

1.1.19 **tasks of professional activity** (of the graduate) – the goal specified in the definite conditions and which can be achieved in the process of realization of the definite actions concerning the object (complex of objects) of professional activity;

1.1.20 **types of the tasks of professional activity** – conventional subdivision of the tasks of professional activity according to the actions made for the achievement of the specified goal.

## 1.2. Notations and Abbreviations

The following notations and abbreviations have been used in this document:

**GQW** – graduate qualification work;

**HE** – higher education;

**SE** – state examination;

**CU** – credit unit;  
**RW** – research work;  
**GPC** – general professional competences;  
**BPEP** – basic professional educational program of higher education;  
**GLF** – generalized labor function;  
**PA** – professional activity;  
**PC** – professional competence;  
**PNRPU** – Perm National Research Polytechnic University;  
**SBEP** – suggested basic educational program on the field of study;  
**PS** – professional standard;  
**RPC** – required professional competence;  
**SIS** – student’s independent study;  
**IES** – institutional educational standard;  
**UC** – universal competence;  
**AEP** – administration of educational programs of PNRPU;  
**FSBEI** – Federal State Budgetary Educational Institution;  
**FSES** – Federal State Educational Standard.

### 1.3. Standard References

References to the following standard legal and local acts have been used in this document:

Federal law from December 29, 2012 № 273-FL “About education in the Russian Federation”;

Rules of employers’ communities participation in monitoring and prediction of economics demand in experienced personnel, and in the development and realization of state policy in the field of secondary professional and higher education approved by the Russian Federation government Regulation from February 10, 2014, № 92;

The order of organization and implementation of educational activity according to the educational programs of higher education – Bachelor’s course programs, specialist’s programs, Master’s course programs, approved by the Order of the Ministry of Education and Science of the Russian Federation from 05.04.2017 № 301;

The procedure of the state final assessment on the educational programs of higher education – Bachelor’s course programs, specialist’s programs and master’s course programs approved by the Order of the Ministry of Education and Science of Russia from June 29, 2015 № 636;

Charter of PNRPU;

Regulations of procedure for development and approval of the basic professional educational program of higher education – Bachelor’s course program, specialist’s program, master’s course program, approved by the Rector on 28.12.2016;

Institutional educational standard in the field of study 21.03.01 “Oil and Gas Engineering” adopted by the Academic Council of PNRPU 28.02.2019, minutes № 6 and brought into operation from 01.03.2019 by the Order of the Rector of University from 05.03.2019 № 16-O.

## **2. General Characteristics of Educational Program**

### *Goals and objectives of BPEP*

The goal of BPEP realization is students' mastering the programs of Bachelor's course in the field of study 21.03.01 "Oil and Gas Engineering" the result of which is graduates' competences formation in accordance with IEP HE PNRPU in this field of study and professional competences stated for this directivity of BPEP.

The objectives of BPEP realization are forming knowledge and skills, experience of professional activity in the frames of learning definite disciplines (modules) and professional internship necessary for implementing definite objectives by the graduate.

### *Form of education*

Training bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" is implemented by full-time education.

In the process of realizing educational program it can be applied the following forms of training: eLearning, distance educational technologies including conditions when students can master particular courses and disciplines (modules) in the on-line format using the resources of other educational organizations, including universities which provide the quality of students' training in accordance with the world standard.

### *Requirements for the entrants*

The persons having general secondary education, secondary professional education or higher education are permitted to master educational program in the field of study 21.03.01 "Oil and Gas Engineering".

Acceptance for studies at the Bachelor's course program in the field of 21.03.01 "Oil and Gas Engineering" is based on the results of the competition in accordance with the Admission Regulations of PNRPU.

### *Language of Teaching*

Bachelor's course program academic activity in the field of study 21.03.01 "Oil and Gas Engineering" in PNRPU is implemented in the official language of the Russian Federation. Learning in the English language is allowed.

### *The scope of program and time of mastering*

The scope of program 21.03.01 "Oil and Gas Engineering" amounts to 240 credit units defined as labor intensiveness of student's academic load in the process of mastering the mentioned program and includes all types of learning activity specified by the curriculum for the achievement of the intended outcome of learning.

The scope of bachelor's course program of full-time education realized during one academic year amounts to 70 credit units irrespective of the form of learning.

The period of mastering bachelor's course program of full-time studies comes to 4 years.

## **3. Competence model of the graduate**

### **3.1. Characteristic of graduate's professional activity**

#### **3.1.1. Field and sphere of graduates' professional activity**

Field of professional activity and sphere (spheres) of professional activity where graduates mastering the program of the bachelor's course in the field of study 21.03.01 "Oil and Gas engineering" in PNRPU can implement their professional activity in:

01 Education and science (in the sphere of research activities);

19 Production, processing, transportation of oil and gas (in the areas of: ensuring the performance of work on diagnostics, maintenance, repair and operation of oil and gas equipment; performing work on design, safety control and management of work during drilling; organizing work on geonavigational support of drilling of oil and gas wells, repair and restoration of wells; operational support of the technological process of oil, gas and gas condensate production; the organization's management processes and execution of works for the operation of underground gas storage; technological support flows of hydrocarbons and modes of technological oil and gas facilities; implementation of complex of works on field geological studies of underground gas storage wells; monitoring and maintenance of the linear part of main gas pipelines; execution of works on maintenance of the transmission equipment; operation of gas distribution stations; organization of works on diagnostics of gas transmission equipment; development of technical and technological documentation for performing emergency recovery and repair works at gas industry facilities; organization of works on corrosion protection of internal surfaces of oil and gas complex equipment; operation of facilities for receiving, storing and shipping oil and petroleum products);

40 End-to-end kinds of professional activity in industry (in the sphere of quality management and CAD of technological processes).

Graduates can implement their professional activity in other fields of professional activity and (or) spheres of professional activity on conditions that their educational level and obtained competences correspond with the employee skill requirements.

### **3.1.2. Objects of graduates' professional activity or field of knowledge**

The objects of professional activity of the graduates mastering the program of bachelor's course in the field of study 21.03.01 "Oil and Gas Engineering" in PNRPU are as follows:

equipment and technologies for construction, repair, reconstruction and restoration of oil and gas wells on land and at sea;

equipment and technologies for oil and gas production, collection and preparation of well products on land and at sea;

techniques and technologies for field control and regulation of hydrocarbon recovery;

equipment and technologies for pipeline transportation of oil and gas, underground gas storage;

equipment and technologies for storage and marketing of oil, petroleum products and liquefied gases;

equipment and tools for construction, repair, reconstruction and restoration of oil and gas wells on land and at sea;

technological processes of construction, repair, reconstruction and restoration of oil and gas wells;

equipment and technologies for construction, repair, reconstruction and restoration of oil and gas wells on land and at sea;



equipment and technologies for oil and gas production, collection and preparation of well products on land and at sea;

techniques and technologies for field control and regulation of hydrocarbon recovery;

equipment and technologies for pipeline transportation of oil and gas, underground gas storage;

equipment and technologies for storage and marketing of oil, petroleum products and liquefied gases;

equipment and tools for construction, repair, reconstruction and restoration of oil and gas wells on land and at sea;

technological processes of construction, repair, reconstruction and restoration of oil and gas wells;

equipment for oil and gas production, collection and preparation of well products on land and at sea; technological processes of oil and gas production;

equipment for field control and regulation of hydrocarbon recovery;

equipment for pipeline transportation of oil and gas, gas storage (including underground); equipment for storage and marketing of oil, petroleum products and gases (including liquefied); technical, technological and regulatory documentation.

### **3.1.3. Type (types) of objectives and tasks of the graduates' professional activity**

In the frames of the bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" in PNRPU graduates prepare for the solution of professional activity tasks of the following types:

- technological;
- administrative (managerial);
- research;
- design.

Tasks of the graduate's professional activity are presented in section 4 of the supplement 1.

### **3.2 Passport of BPEP competences**

Passport of BPEP competences includes the list of competences (Table 3.1); indicators of competences attainment (Supplement 1); the Table of competences and academic disciplines relationship (Supplement 2) and stages of competences formation (Supplement 3). At that, the last document plays the role of interlink between the marks for the discipline (practice) put during the interim assessment and the results of mastering BPEP in the form of acquired graduate's competences. The result of mastering BPEP by way of formed competency from the Table of the Supplement 3 is considered to be achieved in case of favorable rating for all subjects and practices during interim assessment.

### 3.2.1. Intended outcomes of mastering the basic professional educational program

**Intended outcomes (results) of mastering bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" are determined by the competences formed by the graduate, i.e. his ability to apply knowledge and skills as well as personality measure in accordance with the types of the tasks of professional activity.**

As a result of mastering bachelor's course program in the field of study 21.03.01 "oil and Gas Engineering" the graduate should possess the competences formed in the process of mastering BPEP, established on the ground of IEP HE PNRPU in the field of study 21.03.01 "Oil and Gas Engineering" including professional competences formed on the basis of professional standards corresponding professional activity of the graduates, and other qualifying standards, including the regional ones, of the labour market. The name of the category (group) of competences and corresponding codes and graduate's competences definition are given in Table 3.1.

Table 3.1

#### The list of formed competences

Name of the competencies' category (group)	Code and name of the graduate's competence of educational program
<i><b>Universal competencies</b></i>	
Systemic and critical thinking	<b>UC-1.</b> Is able to search, to make critical analysis and synthesis of information, to apply systemic approach aimed at given problems solution.
Development and realization of projects	<b>UC-2.</b> Is able to define the scope of tasks in the frames of the given target, to choose optimal ways of their solution in terms of the current legal regulations, available resources and restrictions, and is able to adopt reasonable economic decisions in different spheres of vital activity
Team work and leadership	<b>UC-3.</b> Is able to carry out social interaction and to realize his role in the team.
Communication	<b>UK-4.</b> Is able to put into practice business communication in oral and written forms using official language of the Russian Federation and foreign languages.
Cross-cultural interaction	<b>UC-5.</b> Is able to perceive cross-cultural diversity of society in social-historical, ethical and philosophic context.
Self-organization and self-development (including health protection)	<b>UC-6.</b> Is able to control his time, to construct and realize the trajectory of self-development on the basis of educational principles during the whole life.
	<b>UC-7.</b> Is able to maintain necessary level of physical fitness for ensuring efficient social and professional activity.
Life Safety	<b>UC-8.</b> Is able to create and ensure safe conditions for life activity including in the cases of emergency situations.

Inclusive competence	<b>UC-9<sup>1</sup></b> . Is able to apply basic defectologic knowledge in social and professional spheres
Economic culture including financial literacy	<b>UC-10<sup>1</sup></b> . Is able to make reasoned economic decisions in different fields of life activity
Civil stand	<b>UC-11<sup>1</sup></b> . Is able to form intolerable relation to corrupt behavior
<b><i>General professional competence</i></b>	
Application of fundamental knowledge	<b>GPC-1.</b> Is able to solve problems concerning professional activity using methods of modelling, of mathematical analysis, natural-science and general engineering knowledge.
Engineering design.	<b>GPC-2.</b> Is able to participate in project engineering of technical facilities, systems and technological processes taking into consideration economic, ecological, social and other boundary conditions.
Cognitive management	<b>GPC-3.</b> Is able to participate in managing professional activity by the use of knowledge in the field of project management.
Utilization of tools and equipment	<b>GPC-4.</b> Is able to make measurements and take out observations, to process and present experimental data.
Research.	<b>GPC-5.</b> Is able to solve problems in the field of professional activity with the use of modern information technologies and applied hardware and software.
Decision making.	<b>GPC-6.</b> Is able to make reasonable engineering decisions in professional activity, to choose efficient and safe technology.
Use of applied knowledge	<b>GPC-7.</b> Is able to analyze, to draw up and to use engineering documentation related to professional activity in accordance with active standards.
<b><i>Professional competence</i></b>	
<b>Type of professional activity task</b>	
<b><i>1. Technological</i></b>	
Technological	<b>PC-1.1.</b> Ability to realize and correct technological processes of O&G production in accordance with the chosen sphere of professional activity
	<b>PC-1.2.</b> Ability to provide diagnostics, maintenance service, repair and field operation of processing facilities in accordance with the chosen sphere of professional activity
	<b>PC-1.3.</b> Ability to carry out operating security control during the realization of technological processes in O&G production in accordance with the chosen professional activity
	<b>PC-1.4.</b> Ability to carry out operational maintenance of technological processes in accordance with the chosen sphere of professional activity
	<b>PC-1.5.</b> Ability to design technological and industry documentation on the O&G production facilities maintenance and operation in accordance with the

	chosen sphere of professional activity
<b>Tasks of professional activity: 2. Organization and management</b>	
Organization and management	<b>PC-2.1.</b> Ability to organize work of small groups of employees in the process of definite professional tasks solution according to the chosen sphere of professional activity
	<b>PC-2.2.</b> Ability to implement space management in accordance with the chosen sphere of professional activity
	<b>PC-2.3.</b> Ability to organize operational maintenance of technological processes in accordance with the chosen sphere of professional activity
	<b>PC-2.1.</b> Ability to organize the work of small teams and groups of employees in the process of specific professional tasks solution in accordance with the chosen sphere of professional activity.
<b>Tasks of professional activity: 3. Research</b>	
Research	<b>PC-3.1.</b> Ability to carry out applied research on the problems of oil-and-gas industry in accordance with the sphere of professional activity
	<b>PC-3.2.</b> Preparedness to participate in the work of scientific conferences and seminars in accordance with the chosen sphere of professional activity
<b>Tasks of professional activity: 4. Designed</b>	
Designed	<b>PC-4.1.</b> Ability to design technological processes of O&G production in accordance with the chosen sphere of professional activity
	<b>PC-4.2.</b> Ability to implement designed, internal documentation in accordance with the chosen sphere of professional activity

The combination of competences defined by the program of Bachelor's course provides the graduate with the ability to implement professional activity at least in one field of professional activity and sphere of professional activity defined in accordance with the paragraph 4.9 of IEP HE PNRPU and to solve tasks of professional activity at least of one type defined in accordance of the paragraph 4.10 of IEP HE PNRPU.

Indicators of competences attainment are presented in the *Supplement 1*.

### 3.2.2. Table of competences and academic disciplines relationship

Division of all declared competences in accordance with the disciplines was made on the basis of their contents structure analysis and is represented in the table showing the relationship of competences and academic disciplines and practices participating in formation of each competence (see *Supplement 2*)

In the presence of relationship between the declared competence and academic discipline (practice) in the appropriate cell it is appeared the element (part) of competence formed in the frames of the given discipline (practice). Distribution of academic disciplines according to the formed competences is based on the results of the analysis of the competences components.

So, justification of relationship between declared competences and academic disciplines (practicals) gives the opportunity to estimate purposefulness of the basic professional educational program, to determine the distribution of competences according to the academic disciplines and kinds of practical activity, to optimize the contents of the educational program on the basis of internal and interdisciplinary ties.

### **3.2.3. Stages of the graduate's competence-based model formation**

Formation of the competence is the process and the level of its maturity is the characteristic changing in time. Mastering components of the separate competence happens step-by-step.

The stages of forming each of the declared competences are given in the *Supplement 3*. It is necessary to mention that the components of the competence (knowledge and skill) can be formed during lectures and practical lessons in the process of learning different academic disciplines, and component (having skills or experience of activity) is acquired in the process of research work and practical training.

## **4. Conditions of BPEP realization**

Conditions of realization of the bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" meet the requirements determined by IEP HE PNRPU for this field of study.

Requirements for the conditions of realization includes: general-system requirements; requirements for logistics and methodological support; requirements for the personnel realizing the program; requirements for the financial conditions of the program realization; requirements for the applied mechanisms of quality assessment of the academic activity and students' preparedness on the program.

### *General-system requirements for BPEP realization*

FSBEI HE "PNRPU" is the lawful owner of the full legal and beneficial title and has at its disposal the necessary educational activity logistic support (premises and equipment) used for the realization of the bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" by the Block 1 "Disciplines (modules)" and Block 3 "State final assessment" in accordance with Curriculum.

Students of the bachelor's course program are provided with the individual unlimited access to the electronic information educational environment of PNRPU during the whole period of studies.

The electronic information educational environment of PNRPU provides the access to the Curricula, Academic Courses Working Programs (modules), practical training, electronic educational publications and electronic educational recourses given in the working programs (modules), practical training, creation of student's electronic portfolio including the storage of his papers and their assessment.

Counting on 100 persons of the research and educational personnel the average annual number of their publications amounts to 2 ones (not less) in the data base of journals with the index of Web of Science or Scopus, or not less than 20 in the journals with the Russian index of scientific quotation.

*Requirements for the logistic and methodological support of BPEP*

Logistic support of the Bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" includes the characteristic of conditions for the educational process realization, including:

- availability and equipping of premises for conducting academic studies provided by the program, rooms for students' individual work;
- availability of licensed and open courseware, library stock (when printed matters are used in the educational process), access (remote access) to the modern high-end data base and informational reference tools.

In the *Supplement 4* the information about logistic support of the basic professional educational program of higher education – program of Bachelor's course – is presented.

*Requirements for the personnel realizing BPEP*

BPEP realization is provided by the high-level personnel and academic staff of PNRPU, as well as by the persons engaged in the realization of the program on other terms.

The level of the academic staff proficiency should confirm with the qualification profile prescribed by the Unified skills guide for positions of managers, specialists and non-manual workers, section "Qualification profile for positions of managers and specialists of higher professional and additional professional education" approved by the Order of the Ministry of Health and Social Development of the Russian Federation from January 11, 2011 № 1n (registered by the Department of Justice of the Russian Federation on March 23, 2011 № 20237) and professional standards (if available).

The number of the Learning and Research pedagogical staff of PNRPU participating in the program realization, and the persons attracted by the University to the realization of the program on other terms (in reduced to the tenures integral values) who carries out research, teaching and learning or practical work corresponding the field of studies of the taught discipline (module) including the teachers realizing the program of Bachelor's course amounts not less than to 60%.

The number of the Learning and Research pedagogical staff of PNRPU participating in the program realization, and the persons attracted by the University to the realization of the program on other terms (in reduced to the tenures integral values), having the academic degree (including the academic degree created in the foreign state and recognized in the Russian Federation) and/or academic rank (including the rank created in

the foreign state and recognized in the Russian Federation), from the total number of the academic staff makes up at least 50%.

The number of University employees participating in the program realization and persons attracted by PNRPU to the realization of the program on the other terms (in reduced to the tenures integral values) from among the managers and employees of organizations whose activity is connected with directivity/field of study/specialization of the realized program of Bachelor's course (having the record of work in this professional field at least 3 years) makes up not less than 5% in the total number of the University personnel realizing the program of Bachelor's course.

*Requirements for the financial conditions of BPEP realization*

Financial support for the realization of the Bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" is made in the amount which is not less than basic standard costs of the state services concerning the realization of educational programs of Higher education and adjusting factors to the basic standard costs defined by the Ministry of Science and Education of Russia.

*Requirements for the applied mechanisms of quality assessment of the academic activity and students' preparedness on the program*

Quality of education and students' preparedness on the Bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" is determined in the frames of the internal assessment system and also the system of external assessment in which PNRPU participate on a voluntary basis.

To improve the Bachelor's course program University attracts employers and/or their communities, other legal persons and/or individuals including teachers of PRNPU in the process of regular internal quality assessment of academic activity.

Bachelor's course program in the field of study 21.03.01 "Oil and Gas Engineering" was considered at the enlarged meeting of the Department "Oil and Gas Technologies" with the participation of employers' representatives and positively received

Internal system of quality support of the academic activity and students' preparedness of learning BPEP in PNRPU is determined by the complex of internal processes in the frames of QMS PNRPU and described in Quality Manual FSBEI HE "PNRPU".

In the frames of internal system of academic activity quality assessment it has been developed the scheme of processes interaction, has defined the centers of responsibility for the realization of the main processes, has developed documentary procedures, approximate list of the general indicators for the internal quality assessment. In the frames of internal system of quality assessment of academic activity on the Bachelor's course program students are given an opportunity to estimate conditions, contents, organization and quality of the educational process in whole and separate disciplines (modules) and practicals. External quality assessment of academic activity on the Bachelor's course program in the frames of state accreditation procedure is implemented for the purpose of confirming the correspondence of academic activity on the Bachelor's course program with the requirements of FSES HE.

External quality assessment of academic activity and preparedness of students, learning the Bachelor's course program, can be implemented in the frames of professional

public accreditation carried out by employers, their communities and authorized organizations, including foreign organizations or authorized national professional and public organizations being the parts of the international structures. The purpose of such assessment is to recognize the quality and level of graduates' proficiency which meets the requirements of professional standards (in the presence of them), demands of labor market made for the professionals in the appropriate field.



## 1. Indicators of the Universal Competences Attainment

Name of the universal competencies' category (group)	Code and name of the universal graduate's competence of educational program	Code and name of the indicator for the universal competence attainment
Systemic and critical thinking	<b>UC-1.</b> Is able to search, to make critical analysis and synthesis of information, to apply systemic approach aimed at given problems solution.	<b>IA-1uc.1.</b> <b>Knows</b> how to search, to make critical analysis and synthesis of information aimed at solution of the given professional tasks. <b>IA-2uc.1.</b> <b>Is able to</b> apply systemic approach on the basis of search, critical analysis and synthesis of information aimed at solution of science-oriented problems of professional field. <b>IA-3uc.1.</b> <b>Has the skills</b> of search, synthesis and critical analysis of information in his professional field; is a master of systemic approach aimed at solution of the given tasks.
Development and realization of projects	<b>UC-2.</b> Is able to define the scope of tasks in the frames of the given target, to choose optimal ways of their solution in terms of the current legal regulations, available resources and restrictions, and is able to adopt reasonable economic decisions in different spheres of vital activity	<b>IA-1uc.2.</b> <b>Knows</b> the approaches to the problems statement aimed at the achievement of the given target, possesses knowledge in choice of optimal ways of their solution; realizes the basic principles of economy operation as well as the economic development, the aims and forms of the state interest in the economy. <b>IA-2uc.2.</b> In terms of the current legal regulations, available resources and restrictions <b>is able to</b> choose optimal ways of solution of science-oriented tasks in professional field aimed at achievement of the given target; uses the methods of individual economic and financial planning aimed at achievement of the current and long-term financial goals. <b>IA-3uc.2.</b> <b>Has the skills</b> of determining the scope of professional tasks in the frames of the given target; the skills of the choice of optimal ways of their solution considering the current legal regulations and available resources; uses financial instruments for managing personal finances (personal budget), controls personal economic financial risks.
Team work and leadership	<b>UC-3.</b> Is able to carry out social interaction and to realize his role in the team.	<b>IA-1uc.3.</b> <b>Knows</b> different means and ways of personal socialization and social interaction. <b>IA-2uc.3.</b> <b>Is able to</b> build a relationship with human environment, with colleagues. <b>IA-3uc.3.</b> <b>Has the skill of participation</b> in team-work, in social projects, in team's interaction casting.
Communication	<b>UC-4.</b> Is able to put into practice business communication in oral and	<b>IA-1uc.4.</b> <b>Knows</b> general lexical minimum of the Russian and studied foreign languages, basic Russian thesaurus of classroom

	<p>written forms using official language of the Russian Federation and foreign languages.</p>	<p>disciplines (History and Philosophy); literary standard and distinctive features of business functional style, requirements for the Russian and foreign oral and written forms of business communication.</p> <p><b>IA-2uc.4. Is able to</b> analyze, to compare, to generalize and to assess information (facts, events, phenomena, views) in the Russian and foreign languages; logically, reasonably and clearly express thoughts in oral and written forms in the Russian and studied foreign language in situations of interpersonal, professional and business communication.</p> <p><b>IA-3uc.4. Has the skills of</b> oral and written business communication in the Russian and studied foreign language; the skills of preparing and presenting oral and written report; has the attainments of business speech etiquette, basic terminology of the Russian and foreign business sphere.</p>
<p>Cross-cultural interaction</p>	<p><b>UC-5.</b> Is able to perceive cross-cultural diversity of society in social-historical, ethical and philosophic context.</p>	<p><b>IA-1uc.5. Knows</b> fundamentals of philosophic analysis and social-historic context of cultural diversity formation in society (ethno-cultural and confessional peculiarities), theoretical basis for cross-cultural communication ethics.</p> <p><b>IA-2uc.5.</b> In the process of interaction <b>can</b> take into consideration historical conditionality and ontological basis of cross-cultural diversity in Russian society (ethno-cultural and confessional peculiarities); to carry on dialogue with representatives of different cultures; to show cross-cultural tolerance as the ethic norm of behavior in social medium.</p> <p><b>IA-3uc.5. Has the experience</b> of cultural phenomena estimation, the skill of cross-cultural communication in professional sphere in terms of ethical norms, historical conditionality and ontological basis of ethno-cultural, confessional peculiarities of partners of communication.</p>

<p>Self-organization and self-development (including health protection)</p>	<p><b>UC-6.</b> Is able to control his time, to construct and realize the trajectory of self-development on the basis of educational principles during the whole life.</p>	<p><b>IA-1uc.6.</b> <b>Knows</b> the process of personal self-development and the main principles of self-education.</p> <p><b>IA-2uc.6.</b> <b>Is able to</b> plan his working time or time for self-development, to determine the aims of personal and professional development as well as the conditions for their achievement reasoning from the tendencies of professional activity progress and the individual characteristic features.</p> <p><b>IA-3uc.6.</b> <b>Has the skill of</b> self-development and time management.</p>
	<p><b>UC-7.</b> Is able to maintain necessary level of physical fitness for ensuring efficient social and professional activity.</p>	<p><b>IA-1uc.7.</b> <b>Knows</b> the requirements and principles of estimating the level of physical fitness for social and professional work; the ways and procedures for the rise of human fitness level.</p> <p><b>IA-2uc.7.</b> <b>Can</b> appraise the level of physical fitness for further professional activity; to control the level of self-fitness and manage this state.</p> <p><b>IA-3uc.7.</b> <b>Has the experience</b> of appraisal, control and management of physical development; the skill of determining comfortable (good) state for efficient social and professional activity.</p>
<p>Life Safety</p>	<p><b>UC-8.</b> Is able to create and ensure safe conditions for life activity including in the cases of emergency situations.</p>	<p><b>IA-1uc.8.</b> <b>Knows</b> the level of requirements for creation and ensuring safe conditions of professional activity; the code of behavior in cases of emergency situations.</p> <p><b>IA-2uc.8.</b> <b>Can</b> create and ensure safe conditions for life activity; observe the safety codes in the process of research work and in the field of professional activity; can behave in case of emergency situations.</p> <p><b>IA-3uc.8.</b> <b>Has the skill of</b> safety measures in the process of professional activity; creation and observance of safe conditions for professional activity; has the experience of behavior in conditions of emergency situations.</p>
<p>Inclusive competence</p>	<p><b>UC-9.</b> Is able to apply basic defectologic knowledge in social and professional spheres</p>	<p><b>IA-1uc.9.</b> <b>Knows</b> the general principles of non-discriminative language with respect to the handicapped persons (correct wording concerning the disability and limited possibilities due to poor health) as well as of empathy and psychological support.</p> <p><b>IA-2uc.9.</b> In the process of communication with handicapped persons <b>is able to</b> focus not on the problem but on the handicapped person in terms of his possibilities and conditions of</p>

		social environment. <b>IA-3uc.3. Has the skill of</b> inclusive voluntary work (involving handicapped persons in voluntary social activity), the experience of interaction with such persons on the basis of humanitarian values, their support in difficult situations.
Economic culture including financial literacy	<b>UC-10.</b> Is able to make reasoned economic decisions in different fields of life activity	<b>IA-1uc.10 Knows</b> basic principles of operation of economy and economic development, aims and forms of state participation in economy. <b>IA-2uc.10 Can</b> apply methods of personal economic and financial planning aimed at achievement of current and long-term financial goals. <b>IA-3uc.10 Has the skill of</b> using financial instruments for personal finances management (personal budget), controls economic financial risks of himself.
Civil stand	<b>UC-11.</b> Is able to form intolerable relation to corrupt behavior	<b>IA-1uc.11. Knows</b> the concept of corrupt activity <b>IA-2uc.11. Is able to</b> reveal the signs of corrupt behavior <b>IA-3uc.11. Has the skill of</b> detecting the features of corrupt behavior and its suppression

## 2. Indicators of achieving general professional competences

Name of the category (group) of general professional competences	Code and name of general professional competence of educational program graduate	Code and name of indicator of achieving general professional competence
Application of fundamental knowledge	<b>GPC-1.</b> Is able to solve problems concerning professional activity using methods of modelling, of mathematical analysis, natural-science and general	<b>IA-1<sub>gpc-1</sub>. Knows</b> principle features of modelling mathematical, physical and chemical processes assigned for definite technological processes. <b>IA-2<sub>gpc-1</sub>. Is able to</b> use general laws of the disciplines of mechanical-engineering module; to use general laws of natural-scientific disciplines, the rules of technical drafting and plotting. <b>IA-3<sub>gpc-1</sub>. Masters</b> basic procedures of technological and economic analysis, has the skill of drafting as a member of creative team; participates knowledgeably

	engineering knowledge.	in the work aimed at production processes improvement using experimental data and results of modelling; masters business interaction with maintenance department and can estimate their recommendations taking into account experimental work of the enterprise technological department.
Engineering design.	<b>GPC-2.</b> Is able to participate in project engineering of technical facilities, systems and technological processes taking into consideration economic, ecological, social and other boundary conditions.	<b>IA-1<sub>gpc-2</sub>.</b> <b>Knows</b> vital differences in approach to the project engineering of technical facilities, systems and technological processes. <b>IA-2<sub>gpc-2</sub>.</b> <b>Can</b> determine the demand for commercial material necessary for making the detailed design; analyze the realization of the detailed design requirements in the course of technological process; correct project data owing to his competence; estimate convergence of calculation results obtained by different procedures. <b>IA-3<sub>gpc-2</sub>.</b> <b>Has the skills of</b> collection and processing primary materials as assigned by the management of project department; the skills of efficient fulfillment of the detailed design; the skills of computer work with realization of new methods and software package.
Cognitive management	<b>GPC-3.</b> Is able to participate in managing professional activity by the use of knowledge in the field of project management.	<b>IA-1<sub>gpc-3</sub>.</b> <b>Knows</b> the basic foundation of logistics with reference to oil-and-gas enterprise when general production steps are made in conditions of uncertainty. <b>IA-2<sub>gpc-3</sub>.</b> <b>Can</b> practically apply the elements of industrial management; realize the possibilities of entrepreneurship at overseen entity and its legislative control; find the possibility of combining basic duties with the elements of entrepreneurship. <b>IA-3<sub>gpc-3</sub>.</b> <b>Has skills of</b> personnel management in small production unit; skills of principle appraisal of the applied entrepreneurship activity at the enterprise.
Utilization of tools and equipment	<b>GPC-4.</b> Is able to make measurements and take out observations, to process and present experimental data.	<b>IA-1<sub>gpc-4</sub>.</b> <b>Knows</b> the procedure of conducting typical experiments on the standard equipment in laboratory and at industrial enterprise. <b>IA-2<sub>gpc-4</sub>.</b> <b>Can</b> process the results of research using standard equipment, instrumentation and materials. <b>IA-3<sub>gpc-4</sub>.</b> <b>Masters</b> the experimentation technique with the use of software package.
Research.	<b>GPC-5.</b> Is able to solve problems in the field of professional activity with the use of modern information technologies and applied hardware and software.	<b>IA-1<sub>gpc-5</sub>.</b> <b>Knows</b> content and properties of oil and gas, general provisions of metrology, qualimetry, standardization and certification of oil production. <b>IA-2<sub>gpc-5</sub>.</b> <b>Can</b> use computer with aim to make simple engineering calculation; use appropriately software packages; use general technologies of exploration and prospect for oil as well as organization of oil production in Russia and abroad, standards and specification, sources of information, mass media and multimedia technologies; acquire knowledge by the application of modern educational and information technologies; orient in data flows selecting principal and necessary information; consciously assimilate

		<p>information, independently find, derive, systematize, analyze and select necessary information aimed at problems solution, organize, transform, store and pass it; critically reconsider cumulative information, form personal opinion, convert information into knowledge, apply information in problems solution using different ways of text processing.</p> <p><b>IA-3<sub>gpc-5</sub>. Masters</b> methods of risk assessment and management of quality performance of manufacturing operations; methods of collection and processing of obtained information using modern information technologies and applied hardware and software, methods of information security, storage and submission.</p>
Decision making.	<p><b>GPC-6.</b> Is able to make reasonable engineering decisions in professional activity, to choose efficient and safe technology.</p>	<p><b>IA-1<sub>gpc-6</sub>. Knows</b> the principles of information-communication technologies and basic information security requirements.</p> <p><b>IA-2<sub>gpc-6</sub>. Can</b> solve standard tasks of professional activity on the basis of informational and bibliographic culture with the use of modern technologies and information security requirements.</p> <p><b>IA-3<sub>gpc-6</sub>. Has the skill</b> of solving standard problems of professional activity on the basis of modern information technologies and information security requirements.</p>
Use of applied knowledge	<p><b>GPC-7.</b> Is able to analyze, to draw up and to use engineering documentation related to professional activity in accordance with active standards.</p>	<p><b>IA-1<sub>gpc-7</sub>. Knows</b> the content of engineering documentation models connected with professional activity.</p> <p><b>IA-2<sub>gpc-7</sub>. Can</b> use the basic types and content of engineering documentation models connected with professional activity; demonstrates the ability to generalize information and put it into the blanks of models in accordance with active standards.</p> <p><b>IA-3<sub>gpc-7</sub>. Has the skill</b> of reporting, making reviews, references, requests and etc. relying on real situation.</p>

### 3. Indicators of achieving graduates' professional competences

Task of PA/generalized labour function	Category of professional competence	Code and name of competence	Code and name of indicator of competence achievement	Grounds (PS, analysis of experience)
<b>Type of professional activity task</b> <b>1. Technological</b>				
Realization of technological processes in oil-and-gas production	Technological	<b>PC-1.1.</b> Ability to realize and correct technological processes of O&G production in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-1.1.</sub></b> <b>Knows</b> basic production processes representing unified chain of O&G operation practices. <b>IA-2<sub>pc-1.1.</sub></b> In coordination with service companies and technical service specialists <b>is able to</b> correct technological processes taking into consideration real situations. <b>IA-3<sub>pc-1.1.</sub></b> <b>Masters</b> production processes management with the use of modern equipment and materials.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Ensuring of diagnostics, maintenance service, repair and field operation of processing facilities	Technological	<b>PC-1.2.</b> Ability to provide diagnostics, maintenance service, repair and field operation of processing facilities in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-1.2.</sub></b> <b>Knows</b> the function, service instruction and repair of O&G facilities; principles of organization and maintenance engineering, methods of rigging up and adjustment of equipment. <b>IA-2<sub>pc-1.2.</sub></b> <b>Is able to</b> analyze parameters of processing facilities operation; develop and plan introduction of new equipment. <b>IA-3<sub>pc-1.2.</sub></b> <b>Masters</b> techniques of processing facilities diagnostics and maintenance service (internal and external examination) in accordance with requirements of industrial security and labour protection.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Operating security control during the realization of technological processes in O&G production	Technological	<b>PC-1.3.</b> Ability to carry out operating security control during the realization of technological processes in O&G production in accordance with the chosen professional activity	<b>IA-1<sub>pc-1.3.</sub></b> <b>Knows</b> safety regulations in O&G production including the cases of incidents and emergency situations. <b>IA-2<sub>pc-1.3.</sub></b> <b>Can</b> assess risks and organize the work on prevention and elimination of incidents and emergency situations including the cases of service companies involvement. <b>IA-3<sub>pc-1.3.</sub></b> <b>Has the skill of</b> implementing technical control of technological equipment condition and operational capability.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience

Operational maintenance of technological processes in accordance with the chosen sphere of professional activity	Technological	<b>PC-1.4.</b> Ability to carry out operational maintenance of technological processes in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-1.4</sub></b> <b>Knows</b> technological processes in the field of O&G engineering for the organization of the employees' work. <b>IA-2<sub>pc-1.4</sub></b> <b>Can</b> make performing decisions in case of convergence of opinion and conflict of interests, determine work procedure. <b>IA-3<sub>pc-1.4</sub></b> <b>Has the skill of</b> operational maintenance of technological processes in the field of O&G engineering.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Technological and industry documentation design in accordance with the chosen sphere of professional activity	Technological	<b>PC-1.5.</b> Ability to design technological and industry documentation on the O&G production facilities maintenance and operation in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-1.5</sub></b> <b>Knows</b> types of technological and industry documentation and requirements for them; types and requirements for accounting, basic accounting instruments, terms of accounting, algorithms of accounts formation. <b>IA-2<sub>pc-1.5</sub></b> <b>Can</b> form the request for field research and materials. <b>IA-3<sub>pc-1.5</sub></b> <b>Has the skill of</b> industry document and accounting maintenance.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
<b>Tasks of professional activity:</b> <b>2. Organization and management</b>				
Organization of work in small groups of employees in the process of definite professional tasks solution	Organization and management	<b>PC-2.1.</b> Ability to organize work of small groups of employees in the process of definite professional tasks solution according to the chosen sphere of professional activity	<b>IA-1<sub>pc-2.1</sub></b> <b>Knows</b> the distribution of duties among personnel of production units as well as among the personnel of production units and service departments of contractors during realization of O&G production technological processes. <b>IA-2<sub>pc-2.1</sub></b> <b>Is able to</b> provide realization of project decisions by contractors according to O&G production technological processes. <b>IA-3<sub>pc-2.1</sub></b> <b>Masters</b> the information about the list of job to be fulfilled by contractors and service organizations, about drilling, field and accessory equipment and about main pipeline equipment and storage facilities.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Space management	Organization and management	<b>PC-2.2.</b> Ability to implement space management in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-2.2</sub></b> <b>Knows</b> the arrangement of processing facilities and accessory equipment at production site, qualifying requirements and functions of personnel. <b>IA-2<sub>pc-2.2</sub></b> <b>Can</b> coordinate and control employees' and service contractors' at work at productions site.	PS 19.005, 19.007, 19.045, 19.048, analysis of



			<b>IA-3<sub>pc-2.2</sub></b> <b>Has the ability</b> of coordinating contractors' work aimed at protection of emergency situations.	experience
Organization of operational maintenance of technological processes in accordance with the chosen sphere of professional activity	Organization management	<b>PC-2.3.</b> Ability to organize operational maintenance of technological processes in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-2.3</sub></b> <b>Knows</b> methods of organizing technological processes operation at oil-and-gas complex. <b>IA-2<sub>pc-2.3</sub></b> <b>Is able to</b> apply knowledge concerning technological processes of O&G complex aimed at organization of employees' work; make performing decisions in case of convergence of opinion and conflict of interests; determine work procedure; organize and monitor O&G complex operation; coordinate the work of gathering field data. <b>IA-3<sub>pc-2.3</sub></b> <b>Has the skill</b> of organizing operational management of technological processes in accordance with the chosen sphere of professional activity.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
<b>Tasks of professional activity:</b> <b>3. Research</b>				
Participation in conducting applied research in accordance with the profile of professional activity	Research	<b>PC-3.1.</b> Ability to carry out applied research on the problems of oil-and-gas industry in accordance with the sphere of professional activity	<b>IA-1<sub>pc-3.1</sub></b> <b>Knows</b> the methods of analyzing information concerning the technological processes and operation of technological devices in O&G industry. <b>IA-2<sub>pc-3.1</sub></b> <b>Is able to</b> plan and make necessary experiments including those where software is applied, interpret the results and draw appropriate conclusions. <b>IA-3<sub>pc-3.1</sub></b> <b>Masters</b> the ability to use physical and mathematical apparatus for solution computational and analytical tasks arising in the process of professional activity.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Participation in the work of scientific conferences and seminars	Research	<b>PC-3.2.</b> Preparedness to participate in the work of scientific conferences and seminars in accordance with the chosen sphere of professional activity	<b>IA-1<sub>pc-3.2</sub></b> <b>Knows</b> general directions of research in O&G industry. <b>IA-2<sub>pc-3.2</sub></b> <b>Is able to</b> substantiate the urgency and goals of own research with their further representation at the conferences and seminars; make scientifically-grounded reports on the problems of O&G industry. <b>IA-3<sub>pc-3.2</sub></b> <b>Masters</b> the methods of presenting the results of own research in the form of electronic presentation.	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
<b>Tasks of professional activity:</b>				

**4. Designed**

Engineering maintenance of designing technological processes of O&G production	Designed	<p><b>PC-4.1.</b></p> <p>Ability to design technological processes of O&amp;G production in accordance with the chosen sphere of professional activity</p>	<p><b>IA-1<sub>pc-4.1</sub>.</b> <b>Knows</b> the mechanism and technology of designing technological processes, technological complexes used in production, in particular, systems of supervisory control (monitoring), geological and technical control, and etc., standard computer programs for calculation of engineering tools and technological decisions.</p> <p><b>IA-2<sub>pc-4.1</sub>.</b> <b>Can</b> analyze and summarize the experience of designing engineering and technological projects, apply standard software at designing production and technological processes in O&amp;G industry.</p> <p><b>IA-3<sub>pc-4.1</sub>.</b> <b>Has the skill</b> of designing definite sections of engineering and technological projects.</p>	PS 19.005, 19.007, 19.045, 19.048, analysis of experience
Works on implementation of designed, internal documentation	Designed	<p><b>PC-4.2.</b></p> <p>Ability to implement designed, internal documentation in accordance with the chosen sphere of professional activity</p>	<p><b>IA-1<sub>pc-4.2</sub>.</b> <b>Knows</b> regulations, standards, standing instructions, methods of designing in O&amp;G industry.</p> <p><b>IA-2<sub>pc-4.2</sub>.</b> <b>Can</b> develop standard designs, technological and working papers with the use of CAD of technological processes.</p> <p><b>IA-3<sub>pc-4.2</sub>.</b> <b>Masters</b> innovative methods for solving the tasks of technological and production processes design in O&amp;G industry.</p>	PS 19.005, 19.007, 19.045, 19.048, analysis of experiment

Matrix of competences and training courses relationship

Department	Index	Discipline title	Competence according to the plan	Universal competences											General professional competences							Professional competences							
				УК-1	УК-2	УК-3	УК-4	УК-5	УК-6	УК-7	УК-8	УК-9	УК-10	УК-11	ОПК-1	ОПК-2	ОПК-3	ОПК-4	ОПК-5	ОПК-6	ОПК-7	ПК-1.1	ПК-1.2	ПК-1.3	ПК-1.4	ПК-1.5			
<b>Блок 1 (Б.1). Дисциплины (модули)</b>																													
Базовая часть (обязательная)																													
ГУиИ	Б1.Б.01	История	УК-4, 5																										
ФиИ	Б1.Б.02	Философия	УК-1, 5, 11	+																									
ЭФ	Б1.Б.03	Экономика	УК-1, 2, 10	+	+																								
ФиИ	Б1.Б.04	Правоведение	УК-3, 6																										
СНП	Б1.Б.05	Социология	УК-3, 6, 9																										
ИЗЛП	Б1.Б.06	Иностраный язык	УК-4, 5																										
ФК	Б1.Б.07	Физическая культура и спорт	УК-7																										
БЖ	Б1.Б.08	Безопасность жизнедеятельности	УК-8																										
ООС	Б1.Б.09	Экология	ОПК-1, 2, 6																										
ПМ	Б1.Б.10	Математика	ОПК-1																										
ОФ	Б1.Б.11	Физика	ОПК-1, 4, 7																										
ХЕТ	Б1.Б.12	Химия	ОПК-1																										
ГЭМ	Б1.Б.13	Информатика и телекоммуникации	ОПК-5																										
ДНП	Б1.Б.14	Инженерная геометрия и компьютерная графика	ОПК-7																										
МГО	Б1.Б.15	Материаловедение	ОПК-1																										
ВММБ	Б1.Б.16	Теоретическая механика	ОПК-1																										
ИТМ	Б1.Б.17	Сопроतिжение материалов	ОПК-1, 2																										
ИТМ	Б1.Б.18	Теория механизмов и машин	ОПК-1, 2																										
ИТМ	Б1.Б.19	Детали машин и основы конструирования	ОПК-2, 6																										
СЛМ/ГМ	Б1.Б.20	Термодинамика и теплотехника	ОПК-1, 4																										
ЭТЭМ	Б1.Б.21	Электротехника и электроника	ОПК-1, 4, 6																										
ГЭМ	Б1.Б.22	Метрология, стандартизация и сертификация	ОПК-4, 7																										
ИГТ	Б1.Б.23	Учебно-исследовательская работа	ОПК-3, 5																										
Вариативная часть (по выбору студента)																													
ИГТ	Б1.В.100	Модуль Нефтегазовое дело:																											
ХТ	Б1.В.101	Химия нефти и газа	ПК-3.1																										
ГВП	Б1.В.102	Геология нефти и газа	ПК-3.1																										
ИГТ	Б1.В.103	Промысловая геология	ПК-1.1, 3.1																										
МД/ИГЭС	Б1.В.104	Геология	ПК-3.1																										
ИГТ	Б1.В.105	Физика пласта	ПК-3.1																										
ИГТ	Б1.В.106	Нефтегазовая гидромеханика	ПК-3.1																										
ИГТ	Б1.В.107	Строительство нефтяных и газовых скважин	ПК-1.2, 1.4, 1.5, 2.3, 3.2																										
ИГТ	Б1.В.108	Нефтегазовомасляное образование	ПК-1.1, 1.2, 1.5																										
ИГТ	Б1.В.109	Разработка нефтяных и газовых месторождений	ПК-3.2, 4.1, 4.2																										
ИГТ	Б1.В.110	Эксплуатация скважин и наземных сооружений	ПК-1.5, 2.3, 3.2, 4.1, 4.2																										
ИГТ	Б1.В.111	Сооружение и эксплуатация газонефтепроводов и газонефтехранилищ	ПК-1.2, 2.1, 2.3, 3.2																										
ИГТ	Б1.В.112	Автоматизация процессов нефтегазового производства	ПК-1.4																										
ИГТ	Б1.В.113	Охрана труда и промышленная безопасность	ПК-1.3																										
ЭЭ/ИП	Б1.В.114	Технико-экономическое обоснование инвестиционных проектов	ПК-1.4, 2.1, 2.2																										
Вариативная часть (по выбору студента)																													
ИГТ	Б1.ДВ.00	Дисциплины по выбору:																											
ИЗЛП	Б1.ДВ.01.1	Деловой иностранный язык	УК-4																										
ЭУИП	Б1.ДВ.01.2	Экономика и бизнес	УК-1, 2, 10	+	+																								
ММ	Б1.ДВ.01.3	Инновационная экономика и технологическое предпринимательство	УК-1, 2	+	+																								
СНП	Б1.ДВ.01.4	Деловые коммуникации	УК-3, 6																										
СНП	Б1.ДВ.01.5	Социальная адаптация лиц с ограниченными возможностями здоровья	УК-3, 9																										
ПМ	Б1.ДВ.02.1	Математика, специальные главы	ОПК-1																										
ОФ	Б1.ДВ.02.2	Физика, специальные главы	ОПК-1, 4, 7																										
ХЕТ	Б1.ДВ.02.3	Химия, специальные главы	ОПК-1																										
ИГТ	Б1.ДВ.02.4	Информатика в приложении к отрасли	ОПК-5																										
ФК	Б1.ДВ.03	Прикладная физическая культура - элективные модули дисциплины по видам спорта	УК-7																										
<b>Блок 2 (Б.2). Практики, научно-исследовательской работа (НИР)</b>																													
Вариативная часть (по выбору студента)																													
ИГТ	Б2.В.01	Учебная практика, геологическая	ПК-3.1																										
ИГТ	Б2.В.02	Учебная практика, ознакомительная	ПК-4.1																										
ИГТ	Б2.В.03	Производственная практика, технологическая	ПК-1.4, 2.1, 2.2, 4.1, 4.2																										
ИГТ	Б2.В.04	Производственная практика, преддипломная	ПК-1.1, 1.2, 1.3, 1.5, 2.3, 3.2																										
<b>Блок 3 (Б.3). Государственная итоговая аттестация</b>																													
Базовая часть (обязательная)																													
ИГТ	Б3.Б.01	Подготовка к сдаче и сдача государственного экзамена																											
ИГТ	Б3.Б.02	Подготовка к процедуре защиты выпускной квалификационной работы																											
ИГТ	Б3.Б.03	Защита выпускной квалификационной работы																											
<b>Всего на одну компетенцию:</b>				4	3	4	3	3	4	2	1	2	2	1	13	4	1	5	3	3	4	2	3	1	3	3			







