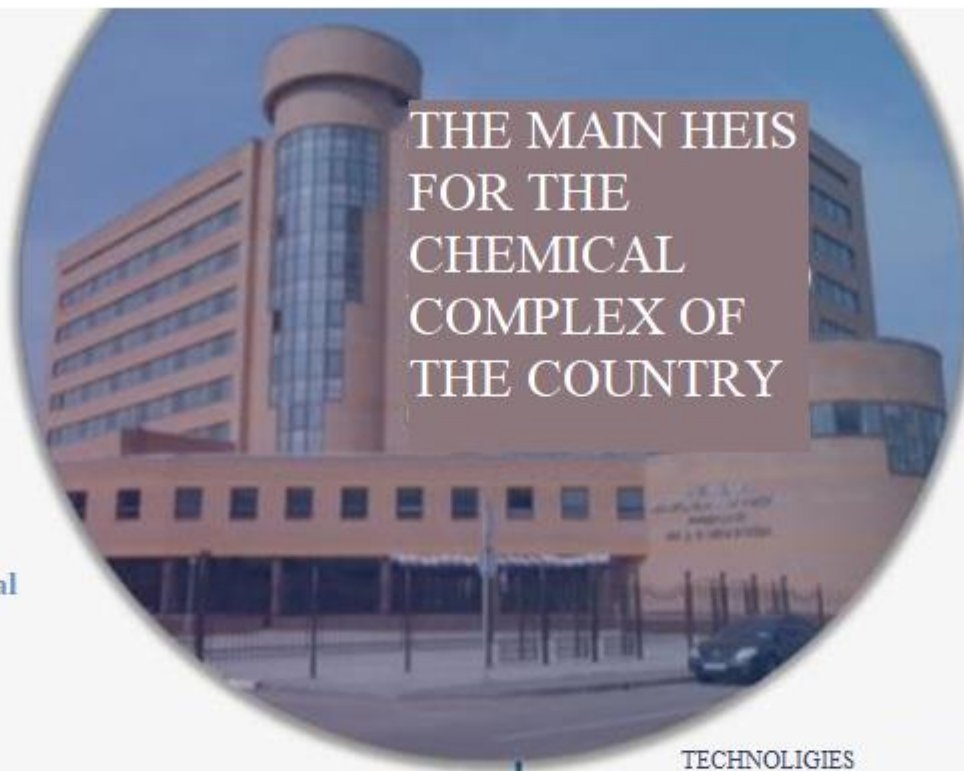


# Contemporary approaches for improving the quality of training qualified specialists for the chemical industry

N.A. Makarov

Professor, Doctor of Technical Sciences,  
Vice-Rector for Educational and Methodological Work  
of D. Mendeleev University of Chemical Technology of  
Russia



## THE MAIN HEIS FOR THE CHEMICAL COMPLEX OF THE COUNTRY



**1898-1918**  
Moscow  
Industrial  
College



**1918-1920**  
Moscow Chemical  
College



**1920-1992**  
D. Mendeleev Moscow  
Chemical Technical  
College



**1992 – present**

**D. Mendeleev University of Chemical Technology of Russia**

TECHNOLOGIES

WORK IN THE  
INTERESTS OF THE  
COUNCIL FOR  
PROFESSIONAL  
QUALIFICATIONS

PERSONNEL FOR  
REGIONS

1

SCIENTIFIC  
SCHOOLS

2

CONNECTION  
WITH THE  
INDUSTRY

3

BRAND  
TRADITIONS



# D. Mendeleev University of Chemical Technology of Russia

## STUDENTS



**611 (567)**

**CANDIDATES OF  
SCIENCES**

## GRADUATE STUDENTS



**195 (190)**

**DOCTORS OF  
SCIENCES**



# Certification of the quality management system



In March 2021, a planned inspection control was carried out: the quality management system in relation to the design and implementation of educational activities for vocational education programs, scientific activities and management of innovative projects meets the requirements of the Russian National Standard ISO 9001-2015 (ISO 9001:2015).

According to the results of the recertification audit at the D.I. Mendeleev University of Chemical Technology of Russia in 2021, no inconsistencies were revealed



# The system of independent assessment of the quality of education



## External evaluation

State accreditation

Professional and public accreditation

License control

Independent assessment of the quality of educational activity conditions



## Internal evaluation

ENQA Standards and Recommendations

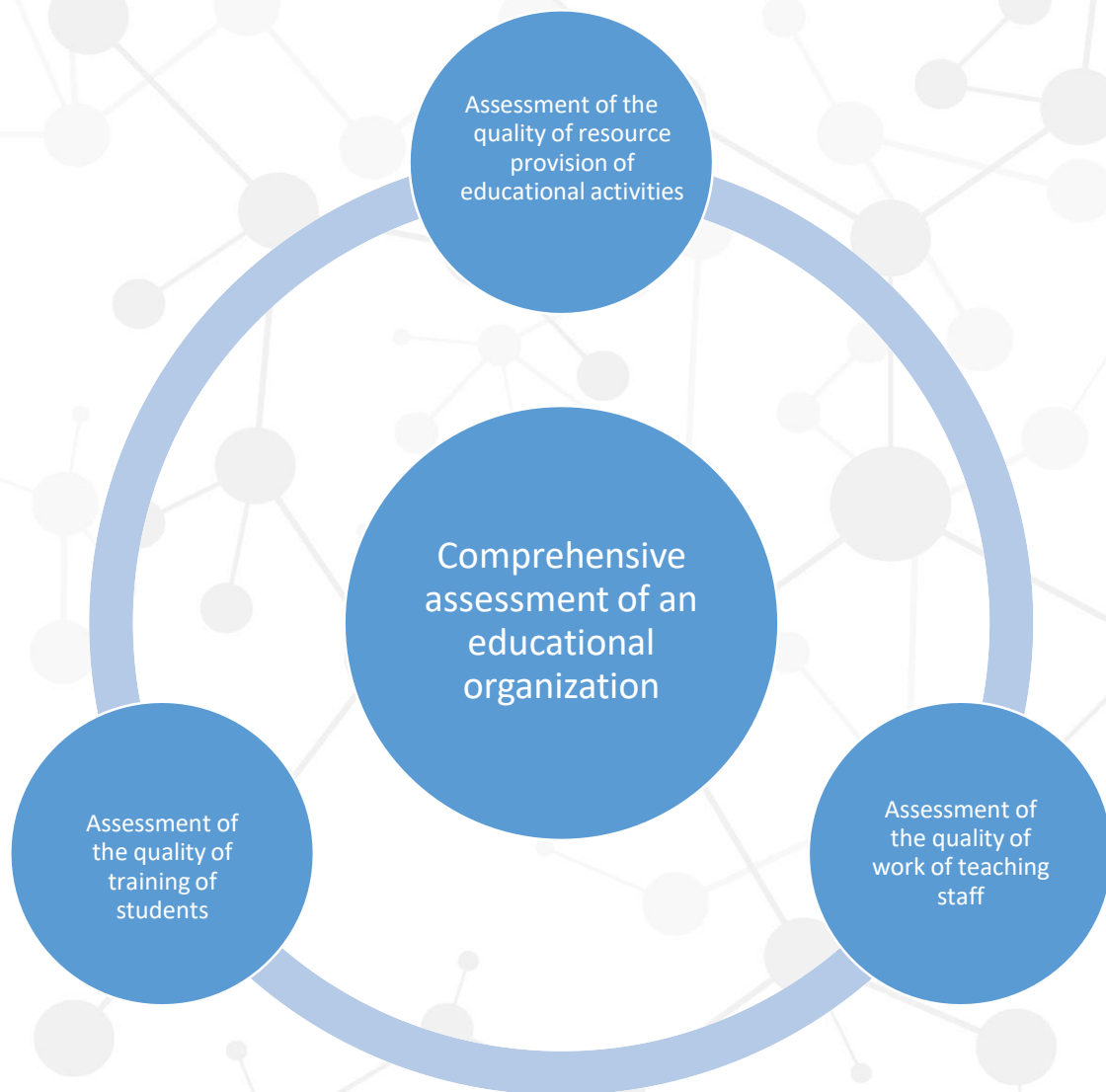
Federal Law "On Education in the Russian Federation"

FSES of HE 3++ Methodological recommendations

Ministry of Education and Science of the Russian Federation

Local regulations

# Model of independent assessment of the quality of education



## Participants:

Ministry of Education and Science of the Russian Federation

Professional communities

Expert organizations

Public organizations

Educational organizations of higher education

Students



# The structure of the system of independent assessment of the quality of education at the D.I. Mendeleev University of Chemical Technology of Russia

## Organizing and conducting an independent assessment of the quality of training of students

Interim certification in disciplines, based on the results of practical training, based on the results of course work and projects

Analysis of the portfolio of educational and extracurricular achievements of students

State final certification

Entrance control of the level of preparedness of students in certain disciplines

Participation in the procedures of external assessment of the level of training of students (Federal Internet exam in the field of vocational education and Federal Internet Exam for undergraduate graduates)

## Organizing and conducting an independent assessment of the quality of work of teaching staff of an educational organization

Conducting the "Best Lecturer" competition

Analysis of the portfolio of professional achievements of teaching staff

Questionnaire of students on the quality of teachers' work

Analysis of the results of the teacher's work within the framework of an effective contract

## Organizing and conducting an independent assessment of the quality of resource provision of educational activity

Self-examination of an educational organization

Licensing control, state accreditation, professional and public accreditation

Independent assessment of the quality of educational activity conditions

Monitoring, periodic evaluation of educational programs

Assessment of satisfaction of consumers of educational services

The mechanisms are detailed in the Regulation on the Independent assessment of the Quality of Education at the D.I. Mendeleev University of Chemical Technology of Russia, approved by the Academic Council of November 14, 2019 No. 646A

# Legislative regulation of the independent assessment of the quality of services provided by educational organizations

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- 1. Federal Law "On Amendments to Certain Legislative Acts of the Russian Federation on the issues of Conducting an independent assessment of the Quality of Services Provided by Organizations in the Field of culture, Social Services, Health and Education" dated 21.07.2014 N 256-FL**
- 2. Federal Law "On Amendments to Certain Legislative Acts of the Russian Federation on improving the independent assessment of the quality of conditions for the Provision of Services by organizations in the Field of culture, health, education, Social Services and Federal Institutions of Medical and Social expertise" dated 05.12.2017 N 392-FL**
- 3. Federal Law "On Education in the Russian Federation" dated 29.12.2012 N 273-FL**





## Article 95. Independent assessment of the quality of education

1. An independent assessment of the quality of education is aimed at obtaining information about educational activities, the quality of training of students and the implementation of educational programs.
  2. An independent assessment of the quality of education includes:
    - 1) independent assessment of the quality of training of students;
    - 2) independent assessment of the quality of the conditions for the implementation of educational activities by organizations engaged in educational activities.
  3. An independent assessment of the quality of education is carried out by legal entities performing specific types of such assessment provided for in paragraph 1 of part 2 of this Article (hereinafter referred to as organizations performing an independent assessment of the quality of education).....
6. The results of an independent assessment of the quality of education do not entail suspension or cancellation of the license to carry out educational activities, suspension of state accreditation or deprivation of state accreditation in respect of organizations engaged in educational activities



# **Independent assessment of the quality of training of students**

# Professional and public accreditation



The PPA procedure is an integral component of an external independent assessment of the quality of education, it contributes to the recognition of the quality and level of training of University graduates that meet the requirements of professional standards, labor market requirements for specialists of the relevant profile; and the requirements of European standards and recommendations (ESG) of the European Association for Quality Assurance in Higher Education (ENQA) – if the accrediting organization is a full member of the European Association for Quality Assurance in Higher Education).

Passing the POA procedure with the involvement of foreign organizations or authorized national professional and public organizations that are part of international structures is the basis for the recognition of accredited programs and universities throughout the European Higher Education Area.

The PPA procedure is the most important tool for external quality assessment in accordance with the FSES of HE 3++, it is taken into account when conducting an accreditation examination during the passage of state accreditation, and when conducting a competition for the distribution of admission control figures.

# Professional and public accreditation at the D.I. Mendeleev University of Chemical Technology of Russia



From April 20 to 22, 2021, as part of the professional and public accreditation procedure, an external examination of three clusters of educational programs took place:

Cluster: Chemistry and Chemical Technology

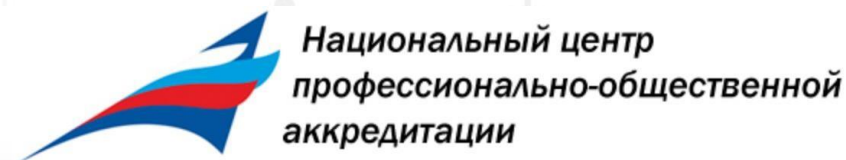
Head: Vice-Rector Filatov S.N.

Cluster: Biotechnology

Head: Head of the Department Panfilov V.I.

Cluster: Computer Science

Head: Head of the Department E.M. Koltsova.



**ФИЦ  
БИОТЕХНОЛОГИИ**  
РАН



**РОССИЙСКИЙ  
СОЮЗ  
ХИМИКОВ**



**ДЕПАРТАМЕНТ  
ИНФОРМАЦИОННЫХ  
ТЕХНОЛОГИЙ**  
ГОРОДА МОСКВЫ

**26 educational programs**

**15 external  
experts**





# Professional and public accreditation



14 Training Areas have been accredited in accordance with the European standards for quality assurance of ESG education, the requirements of professional standards and the labor market

**EXCELLENT  
QUALITY**  
аккредитация.рф



# The Federal Internet Exam in the field of vocational education (FIVE)



**FIVE will provide:**



external independent assessment of the level of educational achievements of students, confirmed by a quality certificate;

influence on the university's efficiency rating and distribution of admission control figures;



taking into account the results of FIVE in professional and public accreditation (Decision of the National Accreditation Council of 30.09.2013);

taking into account the results of the FIVE during the state accreditation procedure (Decree of the Government of the Russian Federation No. 1052 of 15.08.2019);



internal monitoring to diagnose the degree of assimilation of educational material by students;

formation of elements of the student's electronic portfolio.



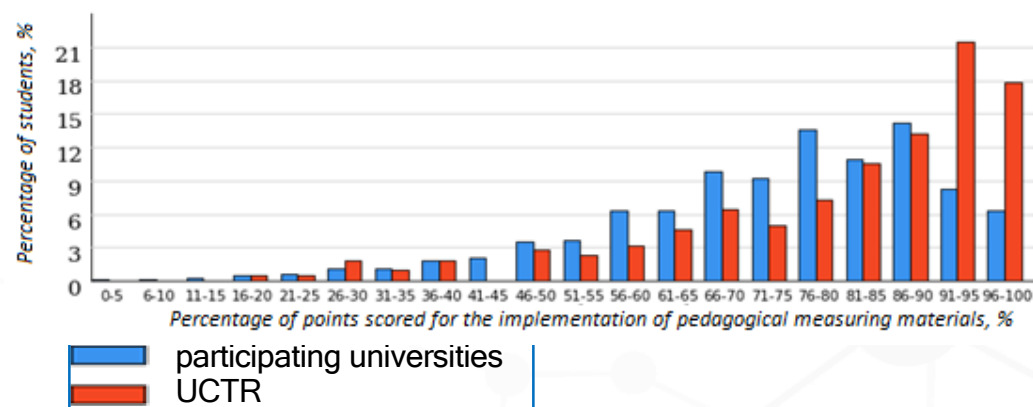


# The Federal Internet Exam in the field of vocational education (FIVE) 2020



The exam was held for students of 2-4 courses of training: 04.03.01 Chemistry, 18.03.01 Chemical technology, 18.03.02 Energy and resource-saving processes in chemical technology, petro-chemistry and biotechnology, 19.03.01 Biotechnology, 38.03.02 Management.

Students were tested in the following disciplines: history, mathematics, inorganic chemistry, materials science, applied mechanics, marketing, concepts of modern natural science.



Distribution of test results of University students with superimposition on the overall result of participating universities

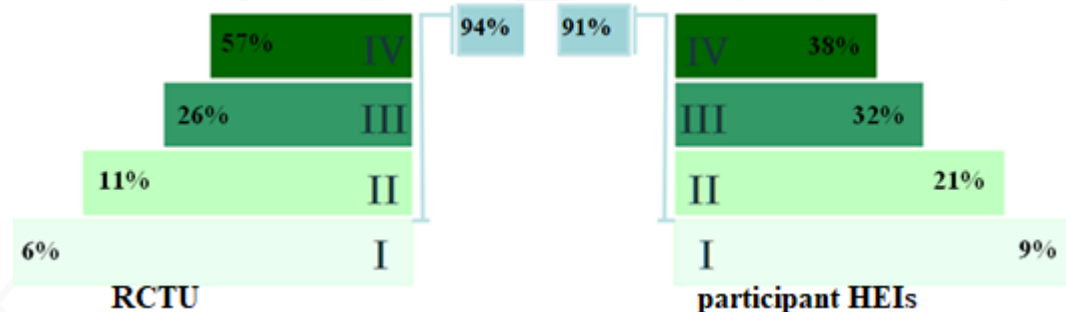


Diagram of the distribution of students' test results by levels of learning

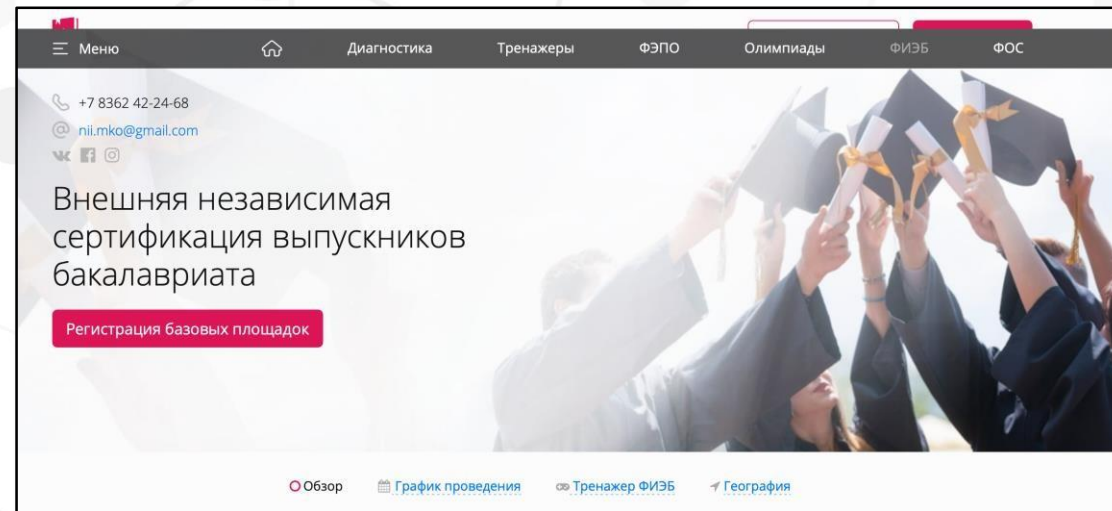


# Federal Internet Exam for Undergraduate Graduates (FIUG)



FIUG is implemented as a voluntary certification of bachelor's degree graduates for compliance with the requirements of the FSES. Information on the results of an independent assessment is taken into account in the National Aggregated Rating and when conducting state accreditation (Decree of the Government of the Russian Federation No. 1052 of 15.08.2019).

The participating students receive personalized certificates based on the results of the FIUG, which give an advantage:  
at the state final certification;  
when applying for a master's degree;  
when applying for employment as a confirmation of the quality of graduate training.



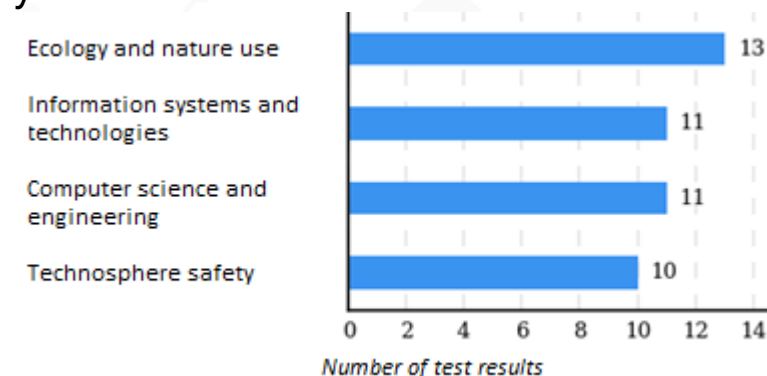


# Federal Internet Exam for Undergraduate Graduates (FIUG-2021)

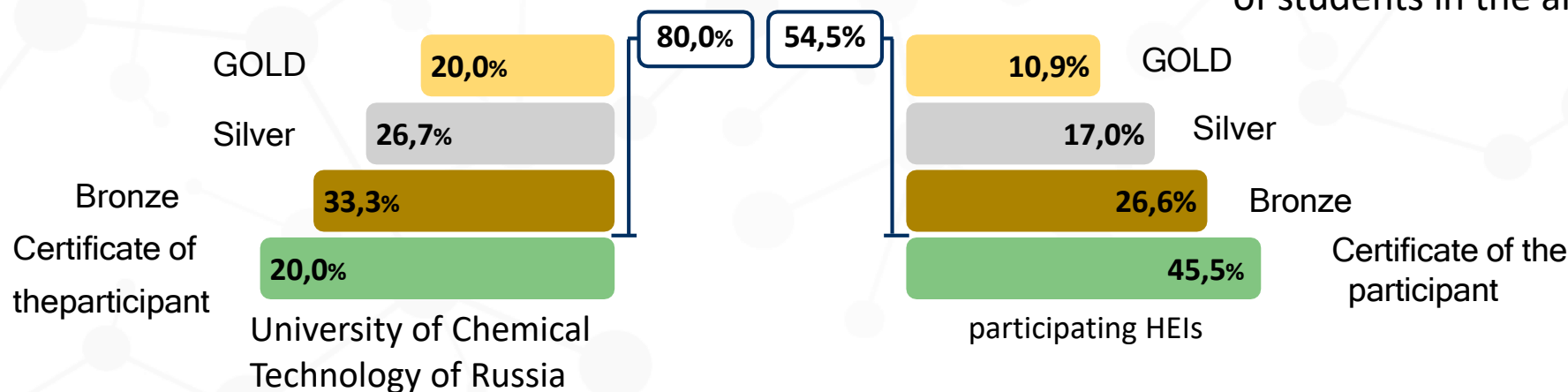


In the 2020/21 academic year, students of the 4th year of bachelor's degree in the following areas of training passed the exam: 05.03.06 Ecology and Nature Management, 09.03.01 Computer Science and Computer Engineering, 09.03.02 Information systems and Technologies, 20.03.01 Technosphere security

Our university has received the status of a university - the base platform for the FIUG in 2021 as a university interested in obtaining an external independent assessment of the quality of training of bachelor's graduates and providing logistical, organizational and technological support for the exam.



Distribution of the number of test results of students in the areas of training



Distribution of certificates



**Independent assessment of the quality of  
conditions for the implementation of educational  
activities by organizations engaged in educational  
activities**

# Mechanism of independent assessment of the quality of conditions



## Executive authorities

- \* create conditions for an independent assessment of the quality of the conditions for the provision of services
- \* take measures to eliminate the identified shortcomings of the Ministry of Education and Higher Education of the Russian Federation

## PUBLIC CHAMBERS

## PUBLIC COUNCILS FOR THE INDEPENDENT QUALITY ASSESSMENT (NOC)

- \* form Public Councils for the NOC and approve their composition
- \* conduct an independent assessment of the quality of conditions for the provision of services by social organizations
- \* develop proposals to eliminate the identified shortcomings
- \* collect and summarize information about the quality of service conditions: analysis of organizations' websites, survey of service recipients, evaluation activities

## OPERATORS

- provide:
  - \* openness, accessibility of information
  - \* technical ability to express opinions to citizens-recipients of services on their official websites
  - \* implement plans to eliminate identified deficiencies

## EDUCATIONAL ORGANIZATIONS

- \* express an opinion on the quality of the conditions for the provision of services

## CITIZENS-RECIPIENTS OF SERVICES

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ  
РОССИЙСКОЙ ФЕДЕРАЦИИ

МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ ПО РАСЧЕТУ ПОКАЗАТЕЛЕЙ НЕЗАВИСИМОЙ  
ОЦЕНКИ КАЧЕСТВА УСЛОВИЙ ОСУЩЕСТВЛЕНИЯ ОБРАЗОВАТЕЛЬНОЙ  
ДЕЯТЕЛЬНОСТИ ОРГАНИЗАЦИЯМИ, ОСУЩЕСТВЛЯЮЩИМИ ОБРАЗОВАТЕЛЬНУЮ  
ДЕЯТЕЛЬНОСТЬ ПО ОБРАЗОВАТЕЛЬНЫМ ПРОГРАММАМ ВЫСШЕГО ОБРАЗОВАНИЯ И  
ДОПОЛНИТЕЛЬНЫМ ПРОФЕССИОНАЛЬНЫМ ПРОГРАММАМ С УЧЕТОМ ОСНОВНЫХ  
ПОЛОЖЕНИЙ ФЕДЕРАЛЬНОГО ЗАКОНА № 392-ФЗ ОТ 5 ДЕКАБРЯ 2017 ГОДА

Москва, 2021

## DATA COLLECTION TECHNOLOGY



### METHODS OF COLLECTING INFORMATION



Analysis of information on the implementation of educational activities posted **on the official websites** of educational organizations



**Visit educational organizations** to assess the quality of conditions for the implementation of educational activities



**Survey of recipients** of educational services about the quality of conditions for the implementation of educational activities (using a questionnaire posted on a non-specialized website)



# FORMS OF COLLECTING INFORMATION ON THE QUALITY OF CONDITIONS FOR THE IMPLEMENTATION OF EDUCATIONAL ACTIVITIES:



**A FORM FOR COLLECTING AND SUMMARIZING INFORMATION** on the quality of conditions for the implementation of educational activities, filled out by the results of a visit to an educational organization



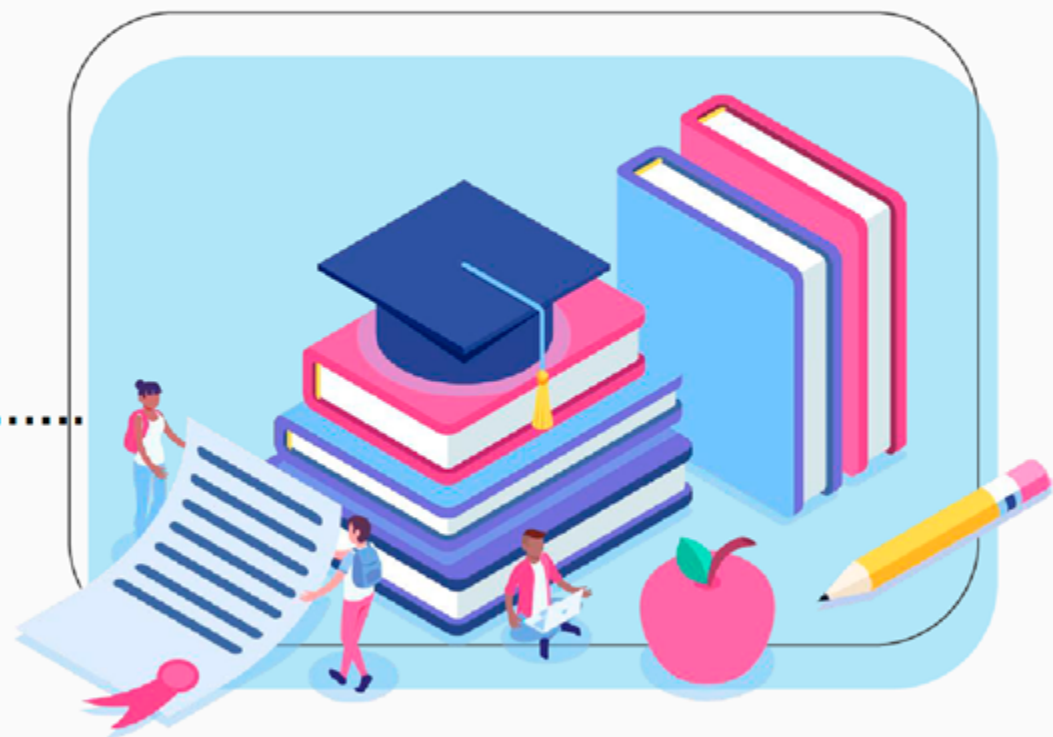
**A FORM TO BE FILLED OUT BASED ON THE RESULTS OF THE ANALYSIS**

of the official websites of organizations engaged in educational activities



**QUESTIONNAIRE FOR RECIPIENTS OF EDUCATIONAL SERVICES TO COLLECT DATA ON INDICATORS**

related to goodwill, courtesy of employees, satisfaction with the conditions of service provision

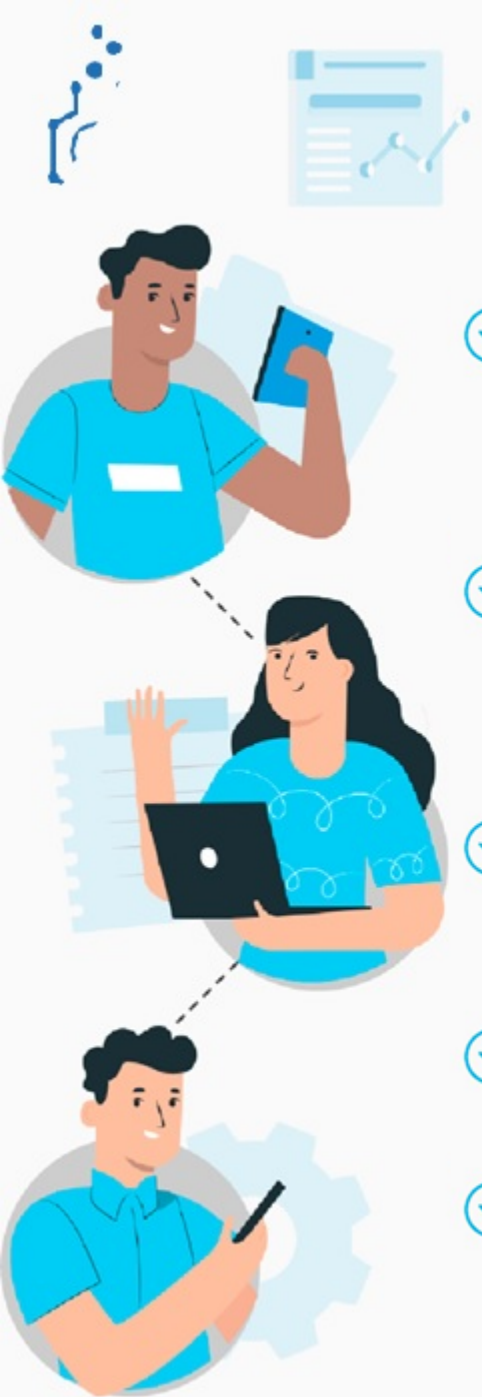




## ORGANIZATION OPERATOR:

## THE ORDER OF THE NOC

- ✓ provides the departure of specialists to collect and summarize information about the quality of conditions for the implementation of educational activities in educational organizations and their branches, filling out forms based on the results of the departure;
- ✓ in connection with the situation related to the spread of a new coronavirus infection and the impossibility of the departure of specialists of the Operator Organization to the educational organization, provides an assessment by specialists of the Operator Organization of the conditions for the provision of services and openness of information on information stands in the premises of the educational organization on the basis of photo and video recording of each parameter of the NOC indicator;
- ✓ provides work on the analysis of the official websites of organizations engaged in educational activities for educational programs of higher education and additional professional programs, filling out forms based on the results of the analysis (availability on the organization's website of information on remote methods of feedback and interaction with recipients of services and their functioning - based on the analysis of websites of organizations and control activities of the Operator Organization ("control procurement"));
- ✓ provides a questionnaire (survey) of recipients of educational services on the quality of conditions for the implementation of educational activities (using a questionnaire posted on specialized tools posted on the Internet (domain name <http://nok-mon.ru/>))



## ORGANIZATION OPERATOR:

# THE ORDER OF THE NOC

- ✓ provides control over ensuring the representativeness of the study (questionnaire) for each educational organization in respect of which the NOC procedure is being carried out in the current period, and informing the Ministry of Education and Science of the Russian Federation if there is a risk of not reaching the sample population for the educational organization;
- ✓ provides processing of forms filled out based on the results of the analysis of the official websites of organizations engaged in educational activities, based on the results of visits to educational organizations, and processing of questionnaires based on the results of a survey of recipients of educational services on the quality of conditions for the implementation of educational activities;
- ✓ ensures the processing of data on NOC indicators (based on completed forms and questionnaires for all educational organizations that are being evaluated in the current year);
- ✓ provides the calculation of indicators in accordance with the Uniform Calculation procedure for all educational organizations in respect of which the assessment is carried out;
- ✓ provides preparation of database layouts, including the layout of a consolidated database for calculating the indicators of NOC engaged in educational activities.

# FEATURES OF CONDUCTING A SURVEY OF CONSUMERS OF EDUCATIONAL SERVICES



In each educational organization in which the NOC procedure is carried out

1 The general set of recipients of educational services and students with disabilities is determined

2 A sample set of recipients of educational services with disabilities is determined

FOR EACH EDUCATIONAL ORGANIZATION

3 A sample set of recipients of educational services is determined



Students of educational organizations engaged in educational activities under educational programs of higher education and additional professional programs can participate in the questionnaire



# Questionnaire survey of consumers of educational services of D.I. Mendeleev University of Chemical Technology of Russia



The period of the event: up to and including 14.10.2020.

The survey is conducted on the website <http://nok-mon.ru> /. The "SURVEY" section.

The survey is mandatory. The survey is anonymous. The period of the survey does not depend on the arrival of the expert.

## Students



Questionnaire for collecting data on indicators related to goodwill, politeness of employees, satisfaction with the conditions of service provision



Questionnaire for assessing satisfaction with distance learning at the university

(For undergraduate, specialist, Master's degree students)

## Students with disabilities



Questionnaire for the disabled and persons with disabilities

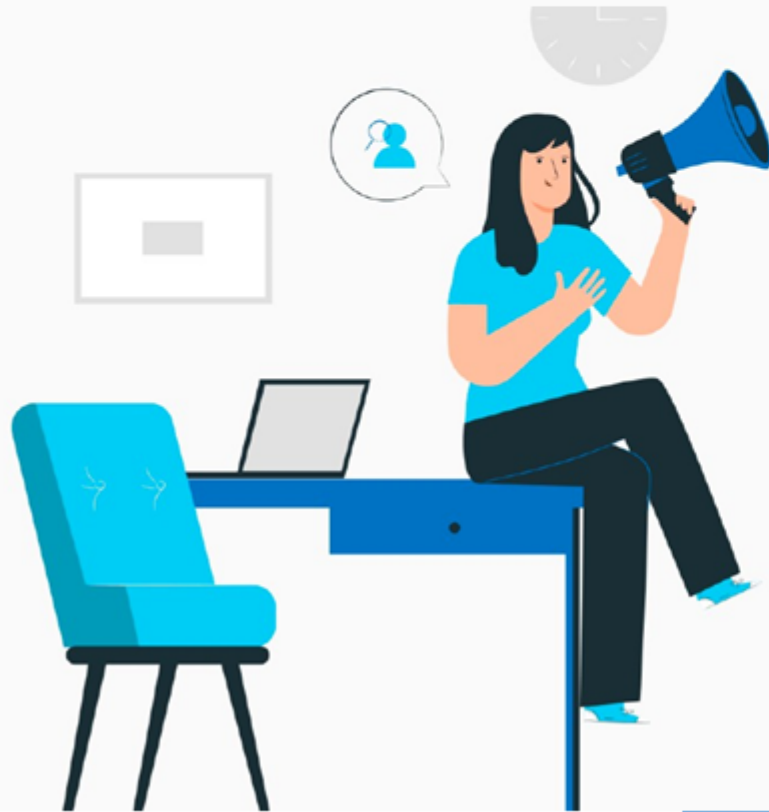
Students need to complete 2 questionnaires. If you are a disabled person or a person with disabilities, please complete 3 questionnaires

From the D.I. Mendeleev University of Chemical Technology of Russia, the survey was attended by:

1. 3350 students;
2. 22 students with disabilities;
3. 300 employees (teachers, researchers, administration representatives).

# FEATURES OF THE VISIT TO EDUCATIONAL ORGANIZATIONS

## REQUIREMENTS FOR CONDUCTING FIELD TRIPS:



The operator organization must provide face-to-face visits to all educational organizations engaged in educational activities under educational programs of higher education and additional professional programs participating in the assessment and their branches. The exception is due to the situation related to the spread of a new coronavirus infection and the inability of specialists of the Organization Operator to travel to an educational organization, the assessment by specialists of the Organization Operator of the conditions for the provision of services and the openness of information on information stands in the premises of the educational organization is carried out in "remote mode" based on photo and video recording of each parameter of the NOC indicator

# FEATURES OF THE VISIT TO EDUCATIONAL ORGANIZATIONS



## REQUIREMENTS FOR CONDUCTING FIELD TRIPS:



**WHEN THE ASSESSMENT IS CARRIED OUT TOWARDS SEVERAL STRUCTURAL DIVISIONS (BRANCHES) of an educational organization, then the visit must be carried out at all addresses, and evaluation actions must be performed for each structural division (branch).**

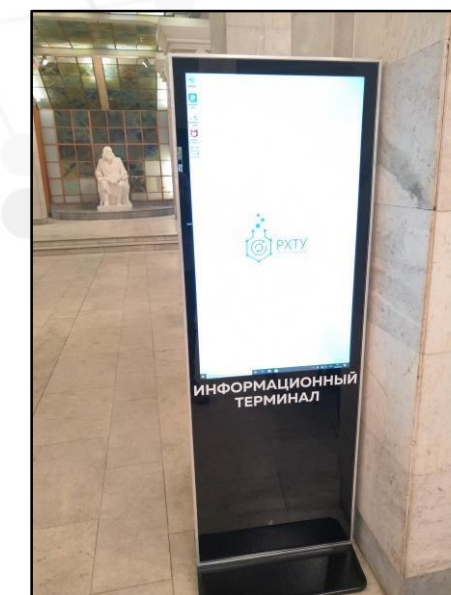
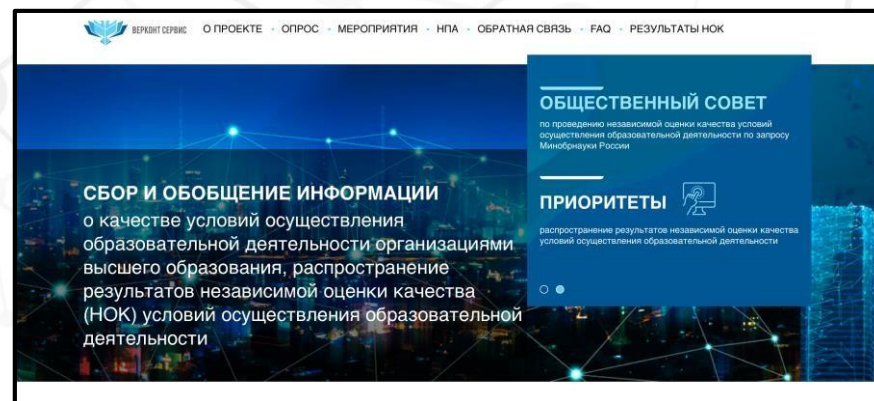
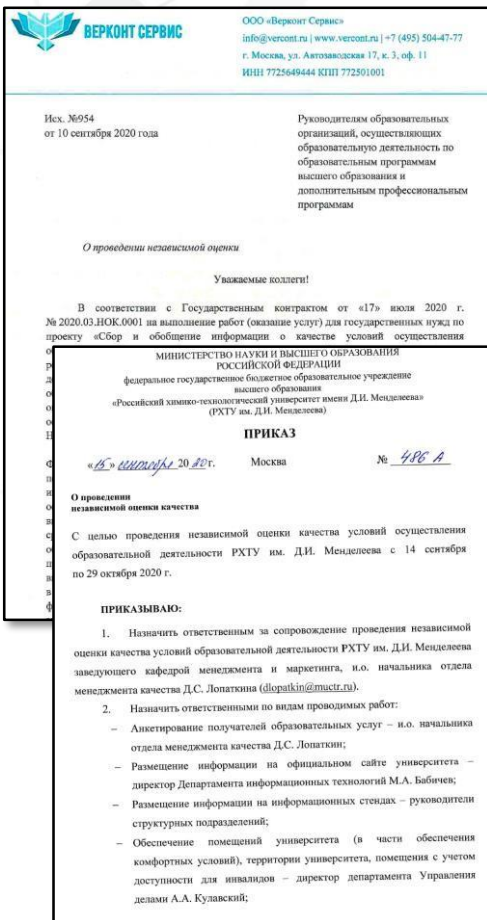
As part of the reporting documentation provided by the Operator Organization to the Ministry of Science and Higher Education of the Russian Federation, copies of completed forms based on the results of the visit must be attached (photos and/or video materials confirming the quality of the conditions for the implementation of educational activities must be submitted as appendices to the completed forms).



# Independent assessment of the quality of educational activity conditions (September, 2020)



In the period from 09/14/2020 to 10/29/2020, the collection and synthesis of information on LCP indicators were carried out.





# CERTIFICATE

## OF THE NOC PARTICIPANT

*confirms that*

**Federal State Budgetary Educational Institution of Higher Education  
"D. Mendeleev University of Chemical Technology of Russia"**

*became a participant in the independent assessment of the quality of  
educational activities in 2020 and received the following results*

"Openness and accessibility of information about organizations engaged in educational activities"	98,63%
"The comfort of the conditions in which educational activities are carried out"	92,78%
"Accessibility of services for the disabled"	99,52%
"Benevolence, courtesy of employees"	96,47%
"Satisfaction with the conditions of conducting educational activities of organizations"	91,93%

Federal operator for NOC,  
LLC "Vercont Service"  
General Director







**THANKS FOR THE ATTENTION!**