



**Kazan  
Federal**  
UNIVERSITY




# SUMMARY REPORT

on Joint International Accreditation of the cluster of  
educational programmes

«Algebra»,  
«Analysis on Manifolds»  
in the field of study  
«Mathematics» (01.04.01)

delivered by Kazan Federal University



2017

While preparing this Summary Report we used information from the Self-Evaluation Report and the Report on the External Review of the cluster of educational programmes «Algebra», «Analysis on Manifolds» in the field of study «Mathematics» (01.04.01) delivered by Kazan Federal University.

The presentation document for the use by the National Accreditation Board.

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## GENERAL INFORMATION ON EDUCATIONAL INSTITUTION

Full name of the educational institution	<i>Federal State Autonomous Educational Institution of Higher Education Kazan (Volga Region) Federal University</i>
Founders	<i>Ministry of Education and Science of the Russian Federation</i>
Year of foundation	<i>1804 – Kazan Imperial University 1925 – Kazan State University named after V. I. Ulyanov-Lenin 2003 – SEI of HPE "Kazan State University named after V. I. Ulyanov-Lenin" 2011 – FSAEI of HPE "Kazan (Volga Region) Federal University" 2015 – FSAEI of HPE "Kazan (Volga Region) Federal University"</i>
Location	<i>420008, 18 Kremlyovskaya Str., Kazan, Russian Federation</i>
Rector	<i>Gafurov Ilshat Rafkatovich, Doctor of Economic Sciences</i>
License	<i>Series 90Л01 № 0008676 reg. № 3045-096 dated from 22.09.2015 permanent</i>
State Accreditation	<i>Certificate of State Accreditation Series 90A01 № 0001632 reg. № 1539 of 01.12.2015 valid till 25.03.2021</i>
Number of students	<i>42706</i> <i>among them:</i> <i>Full-time 30727</i> <i>On-site and off-site 89</i> <i>Part-time 11890</i>

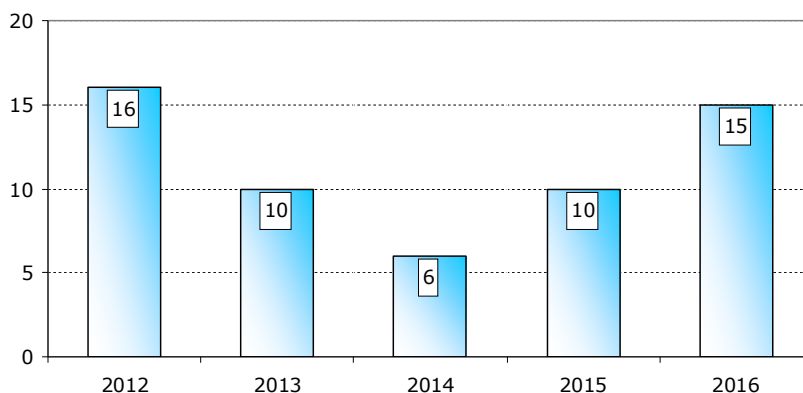
## INFORMATION ON THE EDUCATIONAL PROGRAMMES UNDERGOING ACCREDITATION

Educational programmes	<p>«Algebra» (01.04.01)          «Analysis on Manifolds» (01.04.01)</p>
Level of training / Standard period of training	<p>Master's Degree Programme / 2 years</p>
Structural subdivision (head)	<p><i>N. I. Lobachevsky Institute of Mathematics and Mechanics (Maxim Khramchenkov)</i></p>
Major departments (heads)	<p><i>Department of Algebra and Mathematics of Logics (Marat Arslanov, Doctor of Physical and Mathematical Sciences, Professor)</i></p> <p><i>Department of Mathematical Analysis (Semen Nasyrov, Doctor of Physical and Mathematical Sciences, Professor)</i></p> <p><i>Department of Geometry (Arkadiy Popov, Doctor of Physical and Mathematical Sciences, Professor)</i></p> <p><i>Department of Theory of Functions and Approximations (Farit Avkhadiev, Doctor of Physical and Mathematical Sciences, Professor)</i></p> <p><i>Department of Differential Equations (Aleksandr Elizarov, Doctor of Physical and Mathematical Sciences, Professor)</i></p> <p><i>Department of Theories and Technologies of Mathematics and Information Technology Teaching (Liliana Shakirova, Doctor of Pedagogic Sciences, Professor)</i></p>
Date of the site visit	<p>14-15 March 2017</p>
People responsible for public accreditation	<p><i>Evgeniya Sokolova, Head of the Department of Methodological Support and Monitoring of the Educational Process</i></p> <p><i>Ruslan Zamaliev, Candidate of Physical and Mathematical Sciences, Deputy Director for Academic Affairs</i></p>

## SAMPLING RESULTS OF THE PROJECT «THE BEST EDUCATIONAL PROGRAMMES OF INNOVATIVE RUSSIA»

Indicators	2017
<b>Cluster of the educational programmes in the field of study «Mathematics» (01.04.01)</b>	
Number of the given programmes in the RF	212
Number of higher educational institutions to offer the given programmes	212
Number of programmes – winners of the project (% from total amount of these programmes offered in the RF)	14 (6,6 %)
<b>Republic of Tatarstan</b>	
Number of the given programmes offered in the region	6
Number of programmes – winners of the project (% from total amount of these programmes offered in the region)	1 (16,7 %)
Number of higher educational institutions and branches in the region	71
Total number of programmes offered in the region	559
Total number of programmes – winners of the project (% from total amount of these programmes offered in the region)	100 (17,9 %)

### REFERENCE DATA ON STUDENT ENROLLEMENT FOR EDUCATIONAL PROGRAMMES IN THE FIELD OF STUDY «MATHEMATICS» (01.04.01)



## **ACHIEVEMENTS OF THE EDUCATIONAL PROGRAMMES**

### **Quality of the delivered educational programme**

Quality of the educational programmes is provided by high level of teachers' qualification and its systematic improvement, research activities of the teaching staff and students, cooperation with employers, development and continuous improvement of teaching materials.

### **Providing up-to-date contents of education**

Up-to-date contents of education are provided by systematic review of the educational programmes, use of the results of teachers' research in the educational process, suggestions of students and employers.

### **Teaching staff**

There are 123 (88,75 rates) teachers in the N.I. Lobachevsky Institute of Mathematics and Mechanics. Among them there are 31 (25%) Doctors of Sciences, 77 (63%) Candidates of Sciences, 15 (12%) teachers without the academic degree. Not less than 30% of teachers improve their qualification every year. The educational programmes «Algebra», «Analysis on Manifolds» involve 44 teachers, among them there are 19 Doctors of Sciences and 24 Candidates of Sciences. Teachers of the Institute actively participate in international scientific events. In 2015 teachers took part in 50 international scientific conferences held in Singapore, Russia, Great Britain, Turkey, the Czech Republic, Italy, Finland, Germany, Hungary, Mexico, Poland, etc. For the last three years teachers participated in 119 international conferences.

### **Employability of graduates**

Graduates have necessary competences for fulfillment of professional tasks and sustainability on the labour market. Employability is more than 90%.

### **Educational resources**

The educational programmes are provided with necessary material and technical resources.

The auditory fund is equipped in accordance with modern requirements and provides realization of all kinds of disciplinary and interdisciplinary training, laboratory, practical and research work of students. The University has a licensed access to the electronic library systems BiblioRossica, ZNANIUM.COM, and «Student Electronic Library of the Publishing House «Lan» Students have an access to the bases SCOPUS, Web of Science.

### **Research activity**

The results of research of the teaching staff are published in the articles, monographs, study guides. In 2015 2 monographs, 6 collected

works of international and national conferences, 27 study guides, 106 articles in foreign journals of Web of Science and Scopus, 10 articles in other foreign publications, 52 articles in HAC journals, 85 articles in RSCI journals, 112 articles in other Russian publications, 91 theses of conferences were published.

Similar results were obtained in previous years. Full versions of reports are represented on the official web-site of the Institute. Data SciVal show increase in the number of publications in the data base of Scopus.

### Academic mobility of students

Work on development and support of academic mobility is carried out by a special subdivision – the Department for External Relations and Management of Main Subdivisions. Partnership relations with leading Russian and foreign research and educational institutions are developed. Students actively participate in the large projects of academic mobility (programmes of the European Union– Erasmus Mundus, Tempus, 7<sup>th</sup> Framework Programme, etc.), as well as in international scientific and educational events. Kazan Federal University provides organization and financial support of the programmes of academic mobility, including help in visa receiving, buying tickets and translation from foreign languages. Students and teachers actively participate in the grant programmes for support of academic mobility. Masters of the Institute served internship in France and Poland due to the programmes of academic mobility.

### International projects

In 2015 professors from the University of Danang, the Islamic Azad University, Kharkiv National University came to the N. I. Lobachevsky Institute of Mathematics and Mechanics to carry out joint research.

8 students from Uzbekistan successfully graduated from the University. One student from Syria received master's degree in the field of study «Mathematics» and entered a postgraduate programme of the Institute of Mathematics and Mechanics.

The following international events were held:

- III International Competition on the Best Student Work «Lobachevsky and the XXI century».

- V International Scientific Conference «Information Technologies in Education and Science».

- International School «Mathematical Modeling of Fundamental Objects and Phenomena in the Systems of Computer Mathematics» – KAZCAS-16.

- International scientific seminar «Nonlinear Models in Mechanics, Statistics, Field Theory and Cosmology» – GRACOS-16.



## EXTERNAL REVIEW PANEL



**Aleksandr Mikhalev** (Russia)

Review Chair, Russian expert

*Doctor of Physical and Mathematical Sciences, Professor of the Department of Mathematical Analysis, the Faculty of Mechanics and Mathematics, Lomonosov Moscow State University, editorial board member of the journal «Fundamental and Applied Mathematics»*

A nominee of the Guild of Experts in Higher Education



**Georg Hein** (Germany)

Deputy Review Chair, foreign expert

*Doctor of Sciences, Professor of the Department of Algebraic Geometry and Arithmetic, University of Duisburg-Essen*

A nominee of the Accreditation Agency EVALAG  
(Evaluationsagentur Baden-Württemberg)



**Ekaterina Eremenko** (Germany)

Panel member, representative of the professional community,  
foreign expert

*Candidate of Sciences (Mathematics), research associate of the Department of Geometry and Mathematical Physics, the Faculty of Mathematics, Technical University of Berlin*

A nominee of the Accreditation Agency EVALAG  
(Evaluationsagentur Baden-Württemberg)



**Irek Shaikhnurov** (Russia)

Panel member, representative of students, Russian expert

*4<sup>th</sup> year student of the Faculty of Textile Industry Technology and Fashion, Chairman of the Commission on Education Quality of the students section in the trade union committee, Kazan National Research Technological University*

A nominee of Kazan National Research Technological University

## **INFORMATION ON THE LEADING TEACHERS OF THE EDUCATIONAL PROGRAMMES**

### **Farit Avkhadiev**

*Doctor of Physical and Mathematical Sciences, Professor, Head of the Department of Theory of Functions and Approximations*

### **Leonid Aksentiev**

*Doctor of Physical and Mathematical Sciences, Professor of the Department of Mathematical Analysis*

### **Marat Arslanov**

*Doctor of Physical and Mathematical Sciences, Professor, full member of the Academy of Sciences of the Republic of Tatarstan, Head of the Department of Algebra and Mathematics of Logics, Head of the Department of Algebra of the Research Institute of Mathematics and Mechanics, Kazan State University*

### **Iskander Kalimullin**

*Doctor of Physical and Mathematical Sciences, Chief Researcher of the Academic Laboratory for Algorithmic Methods of Algebra and Logics, Professor of the Department of Algebra and Mathematics of logics, Federal Professor of Mathematics*

### **Boris Kats**

*Doctor of Physical and Mathematical Sciences, Professor of the Department of Mathematical Analysis*

### **Semyon Nasyrov**

*Doctor of Physical and Mathematical Sciences, Professor, Head of the Department of Mathematical Analysis, Head of the Department of Mathematics, Lobachevsky Institute of Mathematics and Mechanics*

# COMPLIANCE OF THE EXTERNAL REVIEW OUTCOMES WITH THE STANDARDS

## STANDARD 1. Programme profile

Compliance with the standard: **full compliance (very good)**

### Good practice:

There are famous scientific schools at the University. International scientific conferences are held regularly.

Purposes of the educational programmes are clearly defined. Learning outcomes correspond to the national standards.

Requirements of the European Qualification Framework (EQF) and ENQA recommendations are taken into account when developing the educational programmes.

A highly qualified teaching staff works at the University. The educational programmes «Algebra», «Analysis on Manifolds» involve 44 teachers, among them there are 19 Doctors of Sciences, 24 Candidates of Sciences.

### Areas for improvement:

It is recommended to give the students the possibility to learn not only English but other foreign languages.

It is necessary to increase opportunities for the students to visit Russian and international scientific conferences.

It is advisable to enhance opportunities of the programmes for involvement of foreign students.

## STANDARD 2. Curriculum

Compliance with the standard: **full compliance (very good)**

### Good practice:

Curriculum is balanced and comprises theoretical, practical and research training of students.

Traditional methods of training with the use of modern technologies are implemented.

Students have the possibility to study according to individual learning paths.

A flexible approach to organization of the educational process takes into account requirements of working students and students with disabilities.

## **Areas for improvement:**

It is recommended to simplify formal procedures for implementation of new training courses, increase the number of seminars and courses in the English language.

It is advisable to take into account extra hours for revision of tests and homework in planning teachers' work.

It is recommended to translate the programmes of the main training courses in English to make the information available for all stakeholders.

It is advisable to extend bibliography with the publications on the issues of the educational programme made not only for the last 5 years.

It is necessary to extend the list of electronic educational resources and use them more actively in the educational process to get planned learning outcomes.

## **STANDARD 3. Student assessment**

Compliance with the standard: **full compliance (very good)**

### **Good practice:**

The educational process is organized in accordance with modern requirements.

Procedures and contents of final academic assessment of graduates correspond to all requirements of the educational standards.

Up-to-date topics and high level of graduation works are marked.

### **Areas for improvement:**

It is advisable to write abstracts of the graduation works in the English language.

It is recommended to increase the number of articles in scientific journals published on the basis of the graduation works.

It is necessary to develop tests for remote and independent monitoring of knowledge.

## **STANDARD 4. Organization of the educational programme**

Compliance with the standard: **full compliance (very good)**

### **Good practice:**

Admission rate for the master's degree programme and admission dynamics for several years show demand for this field of study among the graduates of KFU and foreign universities.

Requirements of students with different capabilities and different level of academic progress are taken into account. Support of foreign

students in their social, cultural, academic and psychological adaptation is in place.

Relevant academic load is in place.

A system of individual students' consulting is well developed.

There are student exchange programmes with the University of Lodz (Poland), the University of Tsukuba (Japan), the University of Bern (Switzerland), the University of Helsinki (Finland), Arizona State University (USA), the University of Pittsburgh (USA), etc.

### **Areas for improvement:**

It is necessary to extend cooperation with Russian and foreign universities on programmes of student exchange and implementation of joint programmes.

It is advisable to take into account variety of students and their requirements, especially in case of a small amount of students.

## **STANDARD 5. Resources**

Compliance with the standard: **full compliance (very good)**

### **Good practice:**

Specialized classrooms and laboratories provide implementation of laboratory practical sessions of all disciplines.

There is an access to the funds of teaching materials, electronic resources, libraries and various data bases.

The teaching staff is highly qualified. The percentage of teachers having academic degree is not less than 80 %.

### **Areas for improvement:**

It is advisable to improve the system of teachers' promotion on the basis of questionnaires.

It is necessary to extend the auditory fund.

It is recommended to extend forms of teachers' professional development, for example to return to the old system of qualification improvement.

It is advisable to provide an access for the students and teachers to the electronic system Eduroam.

## **STANDARD 6. Quality assurance**

Compliance with the standard: **substantial compliance (good)**

### **Good practice:**

The system of quality management correspond to Russian and international standards and include standards and recommendations of ENQA.

Deficiencies identified by the system of quality assurance are rectified.

Students, teachers, administration and employers are involved in the system of quality assurance.

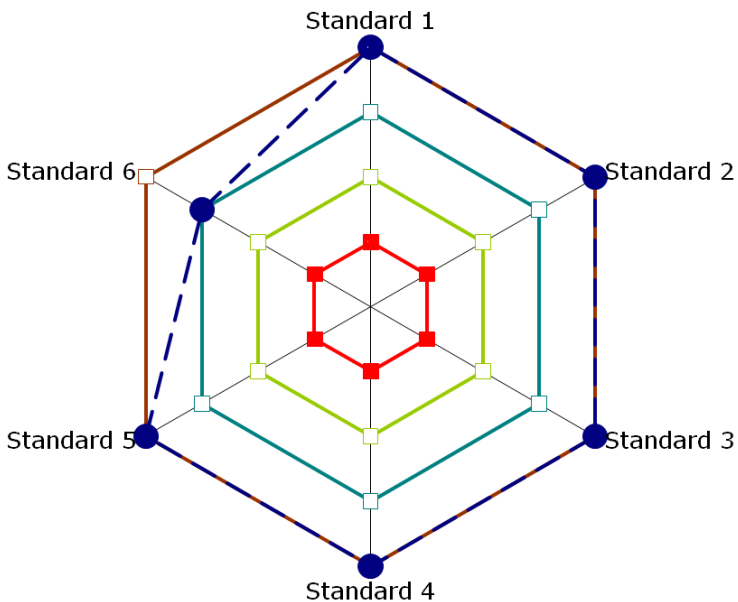
Questionnaires give the possibility to get objective statistical information to determine the level of satisfaction with teachers' work and their rating.

### **Areas for improvement:**

It is advisable to improve assessment of training quality with the following promotion of the best teachers.

It is necessary to improve the mechanism of information assessment about achievements of the educational programmes of other higher education institutions.

## DISTRIBUTION DIGRAM OF THE EXTERNAL REVIEW OUTCOMES



- Unsatisfactory
- Satisfactory
- Good
- Very good
- - Conclusion of Expert Panel

- Standard 1. Programme profile
- Standard 2. Curriculum
- Standard 3. Student assessment
- Standard 4. Organization of the educational programme
- Standard 5. Resources
- Standard 6. Quality assurance

## CONCLUSION OF THE EXTERNAL REVIEW PANEL

Based on the self-evaluation report analysis, documents and data submitted the External Review Panel has come to the conclusion that the educational programmes «Algebra», «Analysis on Manifolds» in the field of study «Mathematics» (01.04.01) **substantially comply** with the standards and criteria of public accreditation of the National Centre for Public Accreditation and evalag.

The Panel recommends that the National Accreditation Board and Accreditation Council evalag accredit the cluster of the educational programmes «Algebra» (01.04.01), «Analysis on Manifolds» (01.04.01) delivered by Kazan Federal University for the period of **6 years**.



## SCHEDULE OF THE SITE VISIT OF THE EXTERNAL REVIEW PANEL

Time	Activity	Participants	Venue
<b>March 13, Monday</b>			
During the day	Arrival of expert teams at Kazan Airport		
12.00 – 15.00	Excursion around the city (for foreign experts)		
15.30	Lunch (for foreign experts)		Cafe, Hayal Hotel
17.00 – 18.30	Internal preparatory meeting of external review panels (ERP). Training		Conference hall, Hayal Hotel
20.00	Dinner (for foreign experts)		Cafe, Hayal Hotel
<b>March 14, Tuesday</b>			
8.40	Meeting in the hotel lobby		
8.45	Arrival at Kazan Federal University (KFU)		Main building, 18, Kremlyovskaya St.
09.00 – 11.00	<b>Internal preparatory meeting of external review panels</b>	ERP	Room 336
11.00 – 12.00	<b>Meeting of expert teams with University Administration and heads of structural subdivisions</b>	Rector, Vice-Rector for Academic Affairs, Head of the Department of Methodological Support and Monitoring of the Educational Process, Directors of the Institutes, Director for International Cooperation Department, ERP	Room 335
12.10 – 12.30	<b>Visiting library</b>	ERP	Library, Main Building
12.30 – 14.00	Lunch	ERP	Cafe, Hayal Hotel
14.00 – 14.10	Transfer to the Mathematics Building. Address: 35, Kremlyovskaya St.		
14.15 – 15.15	<b>Meeting with Institute Director, Deputy Directors</b>	Institute Director, Deputy Directors, ERP	Room 712
15.15 – 15.30	Coffee break		Room 512
15.30 – 16.30	<b>Meeting with programme management (academic and administrative staff)</b>	Heads of Departments, Head of Division, Deputy Director for Academic Affairs, ERP	Room 712

Time	Activity	Participants	Venue
16.30 – 17.00	Work with documents. Review of graduation theses	ERP	Room 512
17.00 – 17.30	<b>Guided tour on the University premises (visiting lecture rooms, labs, equipment)</b>	ERP	35, Kremlyovskaya St.
17-30 – 18-00			Mechanical Building, 18, Kremlyovskaya St.
18.00 – 18.15	Internal meeting of the ERP	ERP	Room 1
20.00	Dinner at the hotel (for foreign experts)		Cafe, Hayal Hotel
<b>March 15, Wednesday</b>			
08.30	Meeting in the hotel lobby		
09.00	Arrival at the Building №2		35, Kremlyovskaya St.
09.00 – 09.15	<b>Internal meeting of the ERP</b>	ERP	Room 512
09.15 – 10.15	<b>Meeting with students</b>	Students, ERP	Room 712
10.15 – 10.30	Coffee break	ERP	Room 512
10.30 – 12.00	<b>Meeting with teachers</b>	Teachers, ERP	Room 712
12.00 – 12.30	Additional meeting (on request)	ERP	Room 712
12.30 – 12.45	Transfer		
12.45 – 14.00	Lunch		Cafe, Hayal Hotel
14.00 – 14.10	Transfer to the Main Building. Address: 18, Kremlyovskaya St.		
14.10 – 16.00	<b>Internal meeting of the ERP. Filling out the assessment forms Preparation of oral report</b>	ERP	Room 336
16.00 – 17.00	<b>Closing meeting of the ERP with University representatives</b>	University representatives, ERP	Room 335
17.00 – 17.30	Free discussion with experts		
20.00	Dinner at the hotel (for foreign experts)		