БФУ имени И. Канта

National Centre for Public Accreditation

SUMMARY REPORT

on international public accreditation of the cluster of educational programmes

— «Applied Mathematics and Informatics» (01.04.02),
— «Software and Information System Administration» (02.04.03)

delivered by Immanuel Kant Baltic Federal University

2020

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 «Applied Mathematics and Informatics» (01.04.02), «Software and Information System Administration» (02.04.03) delivered by Immanuel Kant Baltic Federal University.

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

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GENERAL INFORMATION ON THE EDUCATIONAL INSTITUTION

Full name of the educational institution	*Federal State Autonomous Educational Institution of Higher Education «Immanuel Kant Baltic Federal University»*
Founders	*Ministry of Science and Higher Education of the Russian Federation*
Year of foundation	*1947 — Kaliningrad Pedagogical Institute* *1966 — Kaliningrad State University* *2005 — Immanuel Kant Russian State University* *2010 — Immanuel Kant Baltic Federal University*
Address	*14, A. Nevskogo Str., Kaliningrad, 236016*
Rector	*Aleksandr Fedorov, Doctor of Philology, Professor*
License	*Series 90Л01 №8823 reg. № 1797 of 03.12.2015 permanent*
State accreditaiton	*Certificate of State Accreditation Series 90A01 № 2118, reg. №2019 of 16.06.2016 valid till 15.05.2020*
Number of students	*10569* *of whom:* *9403 are full-time students* *1166 study in absentia*

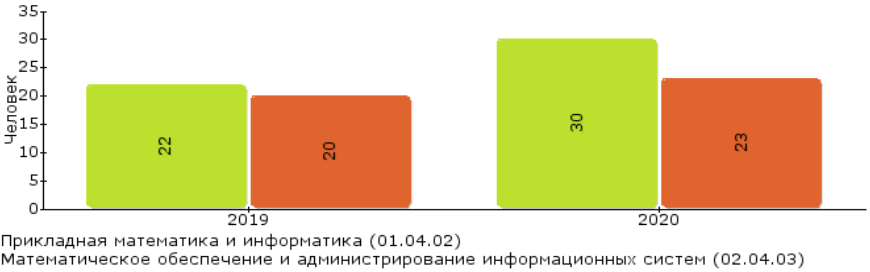
INFORMATION ON THE STUDY PROGRAMMES UNDERGOING ACCREDITATION

Educational programmes	*«Applied Mathematics and Informatics» (01.04.02),* *«Software and Information System Administration» (02.04.03)*
Level of training / Standard period of training	*Master's Degree Programme / 2 years*
Structural subdivision (Head)	*The Institute of Physics, Mathematics and Information Technology (Artyom Yurov, Doctor of Mathematics, Professot)*
Dates of Review	*10-12 November 2020*
Person responsible for accreditation	*Viktoria Balabina, leading expert of the Educational Project Office*

SAMPLING RESULTS OF THE PROJECT "BEST EDUCATIONAL PROGRAMMES OF INNOVATIVE RUSSIA"

Indicators	2020
Cluster of the educational programmes «Applied mathematics and informatics» (01.04.02), «Software and Information System Administration» (02.04.03)	
Number of such programmes in the Russian Federation	133
Number of higher educational institutions offering such programmes	119
Number of programmes – winners of the project (%of the total number of these programmes offered in the RF)	30 (22,5%)
Kaliningrad Region	
Number of such programmes offered in the region	2
Number of programmes – winners of the project (% from total number of these programmes offered in the region)	1 (50%)
Number of higher educational institutions and branches in the region	15
Total number of programmes offered in the region	262
Total number of programmes – winners of the project (% from total number of these programmes offered in the region)	59 (22,5%)

REFERENCE DATA ON STUDENT ENROLLMENT FOR PROGRAMME



ACHIEVEMENTS OF THE EDUCATIONAL PROGRAMME

Quality of implementing the educational programme

The quality of the implementation of educational programmes is ensured by timely revision of the content of programmes in order to meet the requirements of the Federal State Educational Standard and to take into account the latest scientific achievements and update the information and methodological support. In order to monitor the quality of teaching academic disciplines, the Institute conducts a survey "Teacher through the eyes of students", which makes it possible to identify the best pedagogical practices and approaches, as well as shortcomings and analyze the wishes, comments and suggestions of the students.

Provision of up–to-date education

The relevance of the content of education is ensured at all stages of the development and implementation of the main professional educational programmes. In the process of developing and implementing educational programmes, the requirements of the educational standard are first studied, and the results of training specified in the standard as competencies are determined. On this basis, the overall structure and content of the educational programme is determined, the curriculum and the competence matrix are compiled. The determination of the variable part of the educational programme is carried out with the participation of potential employers who make suggestions based on actual needs and demands of the modern sphere of professional activity of graduates. This takes into account the needs and cognitive interests of students identified on the basis of questionnaires and interviews; library and information resources, and material and technical resources of the Institute and its departments.

Teaching staff

The number of teachers involved in the implementation of the educational programmes corresponds to the educational objectives. The teachers of the Institute of Physics, Mathematics and Information Technologies participate in the organization of international research and practice conferences: "Innovations based on Information and Communication Technologies", the annual International conference "Parallel Computing Technologies", etc. The employees of leading international and national universities, research organizations, centers and laboratories (TPU, St. Petersburg State University, Institute of Problems of Chemical Physics of the Russian Academy of Sciences, RUDN, Jean Lamour Institute, France) are involved in the implementation of the Master's programmes.

Independent assessment of student learning outcomes

The BFU regularly participates in the procedures of external quality assurance of educational programmes provided for by the national legislation in order to monitor the effectiveness of educational activities.

These procedures serve the development and implementation of new opportunities and provide objective information about the quality of the educational organization. The external quality assurance procedures in various forms make it possible to evaluate the effectiveness of the quality assurance processes at the University. The procedure of independent evaluation of the learning outcomes of the educational programme 01.04.02 «Applied mathematics and informatics» was successfully carried out in 2015. The procedure of independent evaluation of the learning outcomes of the educational programme 02.04.03 «Software and Information System Administration» was conducted by representatives of employers at the final state certification of graduates. The students enrolled in the Banking Information Technology programme take part in the AI Journey conference on artificial intelligence and data analysis. The event was attended by more than 700 people: students, IT specialists, representatives of business, ministries and departments of Kaliningrad region.

Learning Resources

The Institute of Physics, Mathematics and Information Technologies has 16 laboratories, whose capacities are widely used in the implementation of educational programmes. The Laboratory of Network Technologies and Routing Systems is equipped with Cisco devices for conducting classes on the topic "Organization and functioning of computer networks". The laboratory complex of electrical and microcontroller systems is equipped with stands based on Siemens microcontrollers for modeling the work of industrial enterprises. The laboratory of intelligent robotics is equipped with an anthropomorphic robot AR-600 with feedback, which allows you to program robotic systems used in automated production facilities. The Machine Learning Laboratory and the Computer and Mathematical Modeling Laboratory are designed to develop specialized banking software based on artificial intelligence.

Academic mobility of students

BFU implements inter-university cooperation within the framework of grant programmes (15 existing Erasmus+ and Mobility Direct agreements), both with the support of Russian and international funds, and on the basis of bilateral partnership agreements (176 agreements) with foreign universities in such countries as Austria, Armenia, Belarus, Canada, China, Croatia, Czech Republic, Estonia, Finland, France, Germany, Israel, Ireland, Spain, Italy, Japan, Kazakhstan, Korea, Latvia, Lithuania, Norway, Poland, Portugal, the United States, Taiwan, Ukraine, Sweden.

In the framework of academic mobility the students of BFU are trained in partner universities, such as the Belarusian state University (Belarus), University of Kiev, Munich business school, University of Leipzig (Germany), international business school in Dublin (Ireland), University of the Basque Country (Spain), Volda University College (Norway), Gdansk University of Technology (Poland), University of Uppsala (Sweden), etc.

EXTERNAL REVIEW PANEL

Peeter Normak (Tallinn, Estonia)

Review Chair, Foreign Expert

Doctor of Physics and Mathematics, Professor, Director of the School of Digital Technologies, Tallinn University, member of the Estonian mathematical society, member of Estonian society of information technology, President of Euroscience in Estonia, Deputy head of the Tallinn society of scientists

Olga Pilipenko (Orel, Russia)

Deputy Review Chair, Russian expert

Doctor of Technical Sciences, Professor, Acting Head of the Department of Automated Control Systems and Cybernetics, Rector (2017-2019), Oryol State University named after I. S. Turgenev

Nominated by the Guild of Experts in Higher Education

Belykh Sergey (Kaliningrad, Russia)

Panel member, employer representative

Candidate of Technical Sciences, Associate Professor, Deputy Director of the engineering center of LLC "AVTOTOR Holding Management" for the analysis of the effectiveness of technology, reducing labor intensity and digitalization

Nominated by LLC " AVTOTOR Holding management»

Denis Okolot (Kaliningrad, Russia)

Panel member, student representative

4th year post-graduate student of the Faculty of Production Automation and Control of the Kaliningrad State Technical University

nominated by the Kaliningrad State Technical University

INFORMATION ON THE LEADING TEACHERS OF THE EDUCATIONAL PROGRAMME

Boris Chetverushkin

Doctor of Physics and Mathematics, Professor, Director of the Institute of Applied Mathematics (2005-2015), member of the Russian Academy of Sciences, member of the Presidium of the Russian Academy of Sciences, Honored worker of Science of the Russian Federation

Leonid Zinin

Doctor of Physics and Mathematics, Professor of the Institute of Physical and Mathematical Sciences and Information Technologies, Honorary Worker of Higher Professional Education, member of the Expert Council of the Russian Foundation for Basic Research

Nikolay Kashchenko

Doctor of Physics and Mathematics, Professor of the Institute of Physical and Mathematical Sciences and Information Technologies, Honorary Worker of Higher Professional Education of the Russian Federation

Alexey Stepanov

Doctor of Physics and Mathematics, Professor of the Institute of Physical and Mathematical Sciences and Information Technologies, since 2007 member of the editorial board of three journals included in Science Citation Index, Scopus, Web of Science: Communication in Statistics-Theory and Methods (USA); Communication in Statistics-Simulation and Computation (USA); Communication in Statistics: Case Study, Data Analysis and Applications (USA)

Sergey Chizhma

Doctor of Technical Sciences, Professor of the Institute of Physical and Mathematical Sciences and Information Technologies, author of more than 150 publications, author of 34 inventions

Kiya Bushmeleva

Doctor of Technical Sciences, Professor, Institute of Physical and Mathematical Sciences and Information Technologies, Head of the Department of Automated Information of Processing and Management Systems, Surgut State University

Saigid Uvaysov

Doctor of Technical Sciences, Professor, Head of the Department of Design and Production of Radio-electronic Devices "MIREA-Russian Technological University", Director of the MIEM "Functional Safety and Electromagnetic Compatibility of Radio-electronic means of space systems»

Sergey Tkachenko

Candidate of Technical Sciences, Associate Professor of the Institute of Physical and Mathematical Sciences and Information Technologies

Elena Kirsanova

PhD, Associate Professor of the Institute of Physical and Mathematical Sciences and Information Technologies, Acting Head of the laboratory "Mathematical Methods of Information Protection and Processing"

Bogdan Mishchuk

Candidate of Physical and Mathematical Sciences, Associate Professor of the Institute of Physical and Mathematical Sciences and Information Technologies

Inna Lischuk

Candidate of Pedagogical Sciences, Associate Professor of the Institute of Physical and Mathematical Sciences and Information Technologies

COMPLIANCE OF THE EXTERNAL REVIEW OUTCOMES WITH THE STANDARDS

STANDARD 1. Policy (goals, development strategy) and quality assurance procedures of the educational programme

Compliance with the standard: **substantial compliance**

Good practice:

A documented development strategy is in place: the University has a clear vision for the future.

The provisions of the internal quality assurance system have been developed to ensure quality improvement in accordance with the University's development strategy.

Systematic work is being carried out to develop network interactions with other universities and scientific organizations, as well as with the main groups of employers, who are main stakeholders of the master's programmes under accreditation.

The development of the main documents of the quality assurance system involves the heads of the University's structural divisions at various levels, as well as teachers and employees of the educational departments.

Areas for improvement:

It is recommended to think through the procedures for students' participation in determining the goals and development strategy of the educational organization, for example, through the creation of student quality committees.

It is recommended to develop a programme for ensuring the quality of education, taking into account the standards, criteria and recommendations for quality assurance of higher education developed by foreign accreditation agencies and international associations for quality assurance of higher education.

STANDARD 2. Design and approval of programmes

Compliance with the standard: **substantial compliance**

Good practice:

The university has a regulatory framework for the development, approval and adjustment of educational programmes.

The implemented programmes are practice-oriented in nature, ensuring the demand for graduates in the labor market.

The profiles of the educational programmes take into account the needs of the Kaliningrad region for specialists in this field.

Areas for improvement:

It is recommended to refine the algorithm for the participation of employer representatives in the development of educational programmes, for example, through the creation of educational programme councils, including leading teachers, representatives of employers, students, and graduates in the council.

It is recommended to strengthen the practical component in the educational programs, organize competitionss, and develop opportunities for students to have work placement abroad and in other regions.

STANDARD 3. Student-centered learning and assessment

Compliance with the standard: **substantial compliance**

Good practice:

The University has created a favorable educational environment for obtaining education and developing students' competencies at a high-quality level. The educational programs are aimed at the formation of practical skills that contribute to the better adaptation of graduates to professional activities.

The procedures for the current formative and summative control and final certification of students are clearly regulated by local regulations.

The students are fully informed about the educational programme, disciplines and evaluation criteria for each discipline. The University has developed mechanisms for feedback from students.

The Institute has a flexible approach to the formation of the educational process, taking into account the wishes of students. A wide range of educational technologies, including distance learning, is implemented.

Areas for improvement:

It is recommended to consider the possibility of expanding the array of electives, having in view the aim of developing common, universal competencies that are important in their professional activities (such as teamwork, legal knowledge, business etc.).

It is recommended to develop and adopt updated in accordance with the legislation a local regulation governing the training opportunities in an individual learning path.

It is recommended to introduce an assessment system of input and output testing of students on the subject of expectations from the training program and evaluation of the results of the development of the educational programme. The results of the testing should be discussed at the open Council of the Institute together with representatives of employers.

STANDARD 4. Student admission, support of academic achievements and graduation

Compliance with the standard: **substantial compliance**

Good practice:

The University effectively implements a system of career guidance projects for school graduates.

The University maintains a database of graduates and maintains contacts with graduates. There is a high demand for graduates of educational programmes of this cluster by enterprises and organizations of the Kaliningrad region.

The students regularly take part in scientific events of various levels and actively participate in research.

Effective work has been built to support academic performance through project managers.

Areas for improvement:

It is recommended to improve the system of informing students about the opportunities to participate in academic mobility programmes and about the possibility of recognizing a document of education outside the Russian Federation (Diploma Supplement), about the necessary procedures for this.

It is recommended to consider a system of incentives for students to participate in academic mobility programmes.

STANDARD 5. Teaching staff

Compliance with the standard: **substantial compliance**

Good practice:

The teaching staff of the Institute, participating in the implementation of the educational programmes under accreditation have a high level of qualification, correspondence of specialties, academic degrees and titles with the taught disciplines. The share of the academic staff with a degree is more than 80%. A significant part of the teaching staff has experience working in companies with a specialized focus.

The academic staff is actively involved in international cooperation. A significant proportion of classes (up to 30%) are conducted by invited teachers, including in English.

The teaching staff of the accredited educational programs carries out active research activities in various forms.

The teachers are given the opportunity for professional and career growth.

Areas for improvement:

It is recommended to develop a feedback system. For example, to introduce systematic annual individual interviews with teachers and development staff, during which the results of the previous year's work are analyzed, the most important problems and possible solutions related to the academic activities of the staff and teachers of the institute and the university, as well as the most important tasks and challenges for the coming year are discussed.

It is recommended to increase the publication activity of the teaching staff in the journals indexed by the international databases Web of Science and Scopus, as well as to pay attention to the research topics that should correspond to the profile orientation of the programmes under accreditation.

It is recommended to develop the practice of the teaching staff internships at partner universities, including leading universities in Russia and foreign universities, as well as at large employers' enterprises in order to form case problems for students based on real business needs, to form stable relationships aimed at solving the applied tasks of employers, as well as to implement applied research together with partner universities in the interests of employers.

STANDARD 6. Learning resources and student support

Compliance with the standard: **substantial compliance**

Good practice:

Material and Technical resources as the University in general and at the Institute of Physics and Mathematics Sciences allows the staff to carry out the educational process in accordance with the requirements of the FSES. There are computer classes for general use, specialized laboratories (for example, a high-performance computing laboratory).

The university library and the electronic library system provide all students with modern resources and allow them to get individual access to the funds (including electronic ones). The requirements of the legislation of the Russian Federation on intellectual property and international agreements of the Russian Federation in the field of intellectual property are observed. Students are provided with access to databases, information reference and search engines. A sufficient number of periodicals are subscribed to annually.

Conditions have been created for students to work independently outside of school hours. An infrastructure has been created that allows students to receive a high-quality education: a sufficient number of computers with Internet access.

All participants in the educational process have access to digital resources (scientific journals, monographs, dissertations, etc.), these resources are updated in a timely manner.

Areas for improvement:

It is recommended to find opportunities to cover by the high-speed Wi-Fi network not only the territory of academic buildings, but also the university dormitories (this is especially important in the case of current distance learning).

It is recommended to improve the work on student feedback (to inform students about improvements or changes to the OPOP based on their opinion). Discuss information on the results of student surveys at the collegial bodies of the University and the Institute.

It is recommended to develop an algorithm for informing students about the possibilities of participating in academic mobility programs. Currently, most of the information is transmitted through the mailing list (a low-information channel) and through personal information from the teaching staff or project managers, which narrows the circle of informed students.

STANDARD 7. Collection, analysis and use of information for managing the educational institution

Compliance with the standard: **substantial compliance**

Good practice:

Information technologies are widely used at the University. The University departments and students are informed through the electronic document management system. All participants of the educational process are provided with access (including remote access) to electronic educational resources, electronic libraries. In order to improve the efficiency of educational programme management, a mechanism for collecting and analyzing information on the implementation of educational programmes and the results of their development has been developed.

A monitoring system has been created to analyze the quality of the educational process (a system of questionnaires and surveys of students and teachers, a form for evaluating the discipline and the level of its teaching has been developed for students).

The University has developed an automated information system "Point-rating assessment of academic performance and quality of training at the I. Kant BFU"; its use makes it possible to unify the testing of knowledge, skills and practical experience (readiness for professional activity).

Areas for improvement:

It is recommended to systematically collect and analyze proposals from students, graduates and employers. To increase the participation of students in monitoring the assessment of the quality of education and the organization of the educational process.

It is recommended to develop a system of indicators of the quality of educational programmes.

It is recommended to analyze the current experience of managing the educational programmes in leading Russian and foreign universities, identify possible advantages and implement them in the educational programme management system.

STANDARD 8. Public information

Compliance with the standard: **substantial compliance**

Good practice:

The website of the University and the Institute of Physics and Mathematics is actively used to inform about the activities of both the University as a whole and individual structural subdivisions, as well as about educational programmes.

The system of employment promotion is presented on the University's website. The Career Center conducts systematic monitoring of the results of employment of graduates, offers modern forms of employment promotion. The social media resource is actively used.

Information about educational programmes is available on the Institute's website, it is easy to read, informative and provides fairly complete information on the direction of training. The working programmes of the disciplines are very detailed.

Areas for improvement:

It is recommended to continue working on improving the official website of the organization. It is recommended to refine the University's web page in order to increase the reputation of the University both at home and abroad, and taking into account the specific needs of the intended target group, both in terms of structure and content, and in terms of the availability of information.

It is recommended to consider the feasibility of joining international professional organizations (for example, Informatics Europe).

It is recommended to post on the site the information about the employment of graduates and their demand, indicating the employer. On the website of the University on the page of the Career Center it is advisable create a link to the resource "Student Labor Exchange".

STANDARD 9. On-going monitoring and periodic assessment of the educational programmes

Compliance with the standard: **partial compliance**

Good practice:

The involvement of specialists from specialized organizations in the educational process provides an opportunity to objectively evaluate the results of training, knowledge and skills, and the degree of proficiency in them.

The presence of feedback from graduates working in specialized (educational) organizations allows you to make timely adjustments to the content of educational programmes, taking into account the needs of the labor market.

Areas requiring improvement:

It is recommended to develop a system of actual involvement of stakeholders in the process of improving educational programmes. The current system can be called rather a system of approval of existing educational programmes.

It is recommended to develop a system of regulated procedures for monitoring and reviewing the content of educational programmes, taking into account the opinions of students, graduates, employers and the teaching staff.

It is recommended to develop a mechanism for evaluating the effectiveness and relevance of implemented educational programmes with the involvement of representatives of employers and graduates.

It is recommended to establish feedback from students during the evaluation of the educational programme.

STANDARD 10. Cyclical external quality assurance of the educational programmes

Compliance with the standard: **substantial compliance**

Good practice:

External experts – representatives of the pedagogical and professional community – are actively involved in the development and evaluation of the educational programmes.

The availability of a procedure for approving and implementing a programme of corrective actions based on the results of an external evaluation.

The University independently initiates regular inspections of the educational programmes by the professional community.

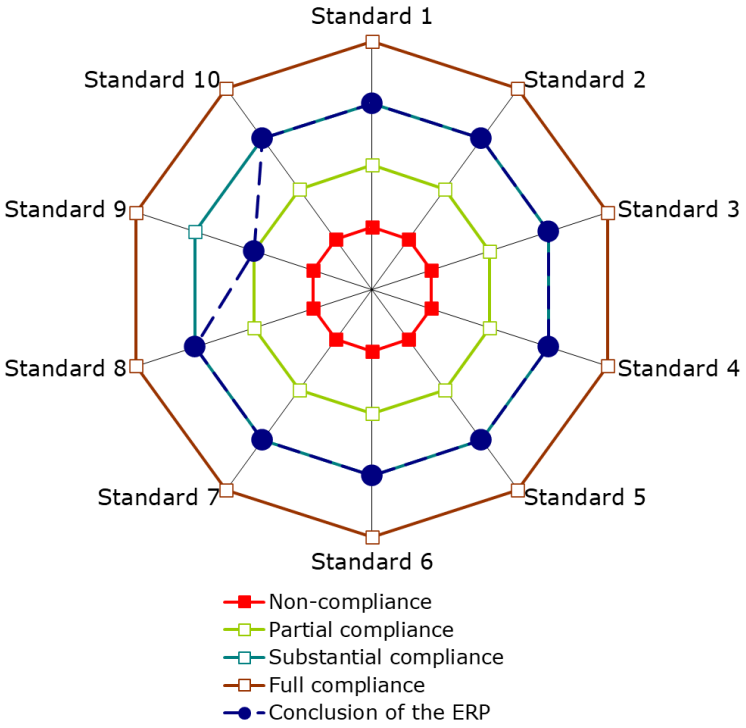
Areas for improvement:

It is recommended to consider the possibility of using network formats of interaction between universities that implement similar programmes in order to conduct procedures for mutual evaluation of educational programmes.

It is recommended to regularly conduct external evaluation of educational programmes and coordinate them with the professional community.

Consider the possibility of conducting an independent external evaluation procedure (professional and public accreditation, Internet testing, participation in rankings, etc.) for all implemented educational programmes.

DISTRIBUTION DIGRAM OF THE EXTERNAL REVIEW OUTCOMES



Standard 1.	Policy (goals, development strategy) and quality assurance procedures of a study programme
Standard 2.	Design and approval of programmes
Standard 3.	Student-centered learning and assessment
Standard 4.	Student admission, support of academic achievements and graduation
Standard 5.	Teaching staff
Standard 6.	Learning resources and student support
Standard 7.	Collection, analysis and use of information for managing the study programme
Standard 8.	Public information
Standard 9.	On-going monitoring and periodic review of programmes
Standard 10.	Cyclical external quality assurance of study programmes

CONCLUSION OF THE EXTERNAL REVIEW PANEL

Based on the self-evaluation report analysis, documents and the submitted data the External Review Panel has come to the conclusion that the cluster of educational programmes «Applied Mathematics and Informatics» (01.04.02), «Software and Information System Administration» (02.04.03) delivered by Immanuel Kant Baltic Federal University substantially **comply** with the standards and criteria of public accreditation of the National Centre for Public Accreditation.

The Panel recommends that the National Accreditation Board accredit the cluster of educational programmes «Applied Mathematics and Informatics» (01.04.02), «Software and Information System Administration» (02.04.03) delivered by Immanuel Kant Baltic Federal University for the period of **6 years**.

SCHEDULE OF THE SITE VISIT OF THE EXTERNAL REVIEW PANEL

Time	Event
10 November, Tuesday	
10.30 — 10.50	On-line meeting of the ERP and NCPA coordinator
Break 10 min.	
11.00-12.30	On-line meeting with the HEI's administration
Break 15 min.	
12.40-14.00	Presentation of the material and technical resources, library. Meeting with the responsible persons
14.00-14.50	Lunch
Linking to the Zoom meeting	
15.00-16.00	Meeting with the Institute Directors
Linking to the Zoom meeting	
16.10 — 17.10	Online meeting with graduate students
17.10 — 18.00	Internal online meeting of the ERP
11 November, Wednesday	
	Link to the Zoom meeting
10.30 – 10.50	Internal online meeting of the ERP
Break 15 min	
11.00 — 12.00	Online meeting with teachers
Break 15 min	
12.10 – 13.10	Online meeting with students
13.10-14.00 Lunch	
14.10 — 15.10	Online meeting with representatives of employers
15.10 — 17.00	Internal online meeting of the ERP. Work with the website, self-evaluation report, filling in individual assessment forms

Time	Event
12 November, Thursday	
	Link to the Zoom meeting
0.00 — 12.30	– Internal online meeting of the ERP**:** discussion of preliminary results of the site visit, preparation of the oral report of the Panel
12.30-13.00	Link to the Zoom meeting
13.00-14.00	Closing meeting of ERP with the representatives of the University