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ПОЛИТЕХ

Санкт-Петербургский
Политехнический Университет
Петра Великого




National Centre for
Public Accreditation

SUMMARY REPORT OF THE EXTERNAL EVALUATION

of the double degree educational programme

“Processing Technologies of Materials ” (22.04.02) for
the specialty “Metallurgy” (M.Sc.)

Delivered by Peter the Great Saint–Petersburg
Polytechnic University



2016

While preparing this Summary Report we used information from the Self-Evaluation Report and the Report on the External Review of the educational programme "Processing Technologies of Materials" (22.04.02) for the specialty "Metallurgy" (M.Sc.) delivered by Peter the Great Saint-Petersburg Polytechnic University. This is the presentation document for the use by the National Accreditation Board.

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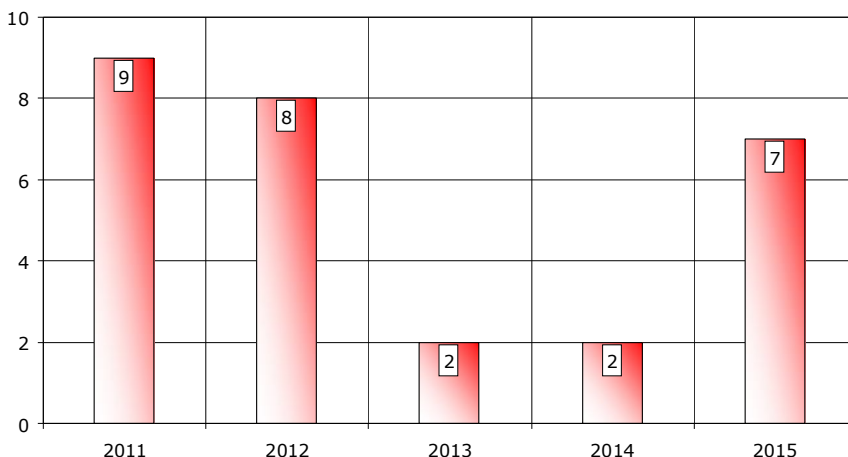
GENERAL INFORMATION ON EDUCATIONAL INSTITUTION

Full name of the educational institution	<i>Federal State Autonomous Educational Institution of Higher Education "Peter the Great Saint-Petersburg Polytechnic University"</i>	
Founders	<i>Ministry of Education and Science of the Russian Federation</i>	
Year of foundation	<i>1899 – Saint-Petersburg Polytechnic Institute 1910 – Emperor Peter the Great Saint-Petersburg Polytechnic Institute 1914 – Emperor Peter the Great Petrograd Polytechnic Institute 1922 – M.I.Kalinin Petrograd Polytechnic Institute 1924 – M.I.Kalinin Leningrad Polytechnic Institute 1990 – Leningrad State Technical University 1992 – Saint-Petersburg State Technical University 2002 – SEI of HPE «Saint-Petersburg State Polytechnic University» 2011 – FSBEI of HPE «Saint-Petersburg State Polytechnic University» 2014 – FAAEI of HE «Saint-Petersburg Polytechnic University» 2015 – FAAEI of HE «Peter the Great Saint-Petersburg Polytechnic University»</i>	
Location	<i>195251, 29 Politekhnicheskaya Str., Saint-Petersburg, Russia</i>	
Rector	<i>Dr. Of Technical Sc., Professor, Corresponding Member of RAC Rudskoy Andrey Ivanovich</i>	
License	<i>Series 90/101 № 0008517 reg. №1518 of 25 June 2015</i>	
State Accreditation	<i>Certificate of State Accreditation Series 90A01 № 0001196 reg. №1120 or 10.10.2014 до 11.03.2019</i>	
Number of students	<i>24244</i>	
	<i>Full-time</i>	<i>15807</i>
	<i>On-site and off-site</i>	<i>3087</i>
	<i>Part-time</i>	<i>5350</i>

INFORMATION ON THE EDUCATIONAL PROGRAMME UNDERGOING ACCREDITATION

Educational programmes	<i>"Processing Technologies of Materials " (22.04.02) for the specialty "Metallurgy" (M.Sc.)</i>
Level of training / Standard period of training	<i>Master's Degree Programme / 2 years</i>
Structural subdivision (head)	<i>Institute of Metallurgy, Mechanical Engineering and Transport (Doctor of Engineering, professor Anatoly Anatolievich Popovich)</i>
Major department (head of major department)	<i>Department of Material Science and Technology (Dr of Engineering, professor, Valery Nikolayevich Tsemenko)</i> <i>Academic adviser of the program (Dr of Engineering, Gleb Andreevich Turichin)</i>
Date of the site visit	<i>20-22 October 2015</i>
Person responsible for public accreditation of the study programme	<i>Prof. Dmitry Germanovich Arseniev, Vice-Rector for International Affairs</i>

ADMISSION DATA FOR THE EDUCATIONAL PROGRAMME «PROCESSING TECHNOLOGIES OF MATERIALS» (22.04.02_08)



ACHIEVEMENTS OF THE EDUCATIONAL PROGRAMME

Quality of the delivered educational programme

SPbPU is listed among the best educational institutions of the world; according to the BRICS rating of HEIs and the Times Higher Education Rating for the countries with developing economies SPbPU takes the 18th place in the general list and the 2nd place among the Russian HEIs. SPbPU takes the 35th place in QS EECA (Emerging Europe and Central Asia) rating, and the 11th place in the Top-100 HEIs of Russia-2015 (according to RAEX («Эксперт РА»), the 8th place among the 24 Russian HEIs in the international University Ranking by Academic Performance; SPbPU is among 5 best HEIs in the country in the sphere of «Technical Sciences, Engineering and Technologies».

According to the Webometrics Ranking of world Universities, SPbPU takes the 5th place among the Russian Universities.

With 15 other HEIs of Russia SPbPU became a winner of the competition for a special grant of the Ministry of Education and Science to raise competitiveness of Russian HEIs among the world leading research and educational centres.

The quality of the double degree programme is ensured by high level qualifications of the teaching staff, broad international ties, and the use of innovation education technologies in the academic process. The quality of the programme is also confirmed by the support of DAAD. The Foundation allocates 10 scholarships of 400 euro a month (5 scholarships for SPbPU and 5 scholarships for – Brandenburg University of Technology).

Provision of up-to-date contents of education

The up-to-date contents of education is provided by internal evaluation of the study programme, which is carried out through regular monitoring of every aspect of the programme and is aimed at enhancing quality assurance of education and training. The monitoring results are published on a regular basis in the collection of works "Quality Management in the Polytechnic University".

The up-to-date content of education is also provided by inviting highly qualified visiting lectures from foreign HEI-partners: Germany, Finland, Spain, Armenia, China, Italy.

Competency of the teaching staff

The Department of Technology in Metallurgy is an advanced structural unit of the University in the sphere of education quality enhancement. The total number of full-time teachers involved in the programme is 12 people, including 7 Doctors of Sciences and 5 Candidates of Sciences.

The teachers are actively engaged in the educational process and participate in career development programmes. Once a year a group of teachers go to Brandenburg University of Technology for the evaluation

of students' graduate work before the defense of their dissertations and for the participation in research and practice seminars.

Research work

Scientific Schools and Research Centers are working at the Departments of IMMET. The teachers are actively involved in grant activities. The results of research work of the teachers are published in scientific journals registered in the databases Scopus and Web of Science.

The students take an active part in research, which is conducted in the graduate Departments, they co-author research publications and participate in conferences and competitions.

SPbPU students have been prize winners of the Open International Student Internet Olympiad in 2014-2015 academic year.

The Departments involved in the education process do a lot of research into the topics relevant for industry. The Programme has a significant research component. The Master students in the course of their studies do research work. The Master students are taught in small groups, 5-8 students on average. Due to this fact the teacher-student ratio is 1:1, which helps to individualize education and training and raise the level of knowledge of Master students who follow individual learning paths and are engaged in active research.

Material and technical resources

SPbPU has all the necessary facilities for quality teaching, including learning and support areas, as well as adequate infrastructure, including dormitories, gymnasiums, university administration offices, the Students' Club, the Fundamental Library, the Reading Room, the White (Assembly) Hall for 600 seats, the Conference Hall, resource centres, the Museum Complex, the Expo Centre and other auxiliary facilities.

At the University there are 350 laboratories equipped for learning and research, 215 computer classrooms with Internet access.

Rooms are equipped with all the necessary devices, furniture and equipment to provide teaching at a high level and create high-quality social and living conditions for students, teachers and other university staff.

Physical facilities of SPbPU include 18 buildings for teaching and laboratory work, 17 engineering infrastructure facilities, 29 heritage assets, 5 social infrastructure objects, 15 dormitories, 7 residential buildings and 98 objects of other types (including production facilities, boxes, warehouses, garages and other structures) with the total area of over 480,000 square meters, of which 262,789.9 square meters are for teaching and laboratory activities, including large lecture halls, classrooms for skills building and laboratory sessions.

A few multimedia centres have been recently opened.

The Departments of both Universities involved in the Double Degree Programme are supplied with modern innovation equipment. Two research laboratories have been established on the basis of both Departments.

Employability of graduates

The major part of graduates enter a postgraduate programme either in BUT or in SPbPU. After the establishment of the double degree programme the students have a possibility to enter the Joint Doctorate programme upon completion of the Double Degree Master's programme.

During their studies on the Master's programme and post-graduate programme students have an opportunity to be employed at the Laboratory of Lightweight Materials and Designs of SPbPU opened in 2014 with the support of the RF Ministry of Education and Science. At the moment 5 participants of the programme are employed at the Laboratory.

Academic mobility of students

In order to increase the opportunities of student participation in exchange programmes and in double degree programmes, to enroll in summer and winter schools SPbPU has joined the European Commission project Enhancing the Attractiveness of European higher education.

The duration of the Double Degree Programme under accreditation is 2 years (4 semesters). The major part of the educational work load falls on the first year because the second year is spent at the guest institution. In the second year the students do two selective modules and write a research paper in the third semester; the fourth semester is devoted to research work and writing a dissertation.

International cooperation

SPbPU is a partner to many world leading Universities: it cooperates with Universities from 47 countries. Over 70 companies and organizations from 19 countries of the world have direct cooperation agreements with SPbPU.

SPbPU has concluded 340 cooperation agreements with 253 Universities from 47 countries all over the world. Out of this number 58 Universities are listed in the Top-500 in QS World University Rankings.

An agreement between SPbPU and Brandenburg University of Technology has been signed on establishing a Joint Doctorate Programme which will be awarding Russian and German diplomas.

EXTERNAL REVIEW PANEL



Helmut Winkel, (Germany)

Review Chair, German expert

Doctor of Engineering, professor, Institute of Material Science and Applied Mathematics, Director

A nominee of ACQUIN



Tuvin Alexander Alekseevich Russia (Russia)

Deputy Review Chair, Russian expert

Doctor of Technical Sc., professor, Dean of the Faculty of Mechanics and Automatics, Textile Institute at Ivanovo State Polytechnic University

A nominee of the Guild of Experts in Higher Education



Jens Freudenberger (Germany)

Panel member, foreign expert

Doctor of Engineering, Honorary Professor of the Department of Physical Metallurgy of Nonferrous Metals at Technical University (Freiberg), professor of the Department of Metal Physics of the Institute for Metal Materials at the Leibniz Institute of the Solid Body and Investigation of Materials (Dresden)

A nominee of ACQUIN



Bokov Vitaly Viktorovich (Russia)

Panel member, representative of employers

Head of the Bureau for Stamping and MOdelling of Metallurgical Processes, AO "Armalit"

A nominee of AO "Armalit"



Dvoryaniniva Yulia Sergeevna (Russia)

Panel member, representative of students

First year Master student of the Management programme, Saint Petersburg State University

A nominee of Saint Petersburg State University

COMPLIANCE OF THE EXTERNAL REVIEW OUTCOMES WITH THE STANDARDS

PART 1. Goals of the study programme

The Master's Double Degree Programme «Processing Technologies of Materials» was launched in 2011 together with the Brandenburg University of Technology, Cottbus (BUT) with the goal of training specialists with the knowledge of two languages, Russian and German, for employment at Russian-German technological companies and for research within the framework of international Russian-German projects. The University of Technology in Cottbus is a globally recognized institution of higher education. It focuses on innovative research in technology. Its profiles are ecology, energy engineering, materials science, construction, as well as information and communication technology. Training is provided at the highest international level. At the disposal of the University are an excellent mentorship program and good facilities for students.

The Programme has been developed within the framework of a cooperation agreement between the Universities, signed in 2009 and is delivered at the Division of Materials Technology of the Institute of Metallurgy, Mechanical Engineering and Transport by the following Departments: "Technology and Materials Research", "Materials, Technology and Casting Equipment", "Welding and Laser Technology" It is a full-time programme delivered in the Russian and German languages. The Programme is unique in comparison to other programs as it gives students an idea of a learning process at a foreign university, and is much more intensive.

The double-degree Master's programme "Processing Technologies of Materials" is one of the few available Russian-German double-degree programmes with major in metallurgy.

The goal of the double degree programme under accreditation is to train qualified specialists in the sphere of processing technologies of materials, who have broad basic knowledge and practical skills in the analysis of technological processes of material production, processing and prognosticating the operating capability of materials in different conditions of their operational use.

SPbPU provides training adhering to the Law on Education in the Russian Federation. The curriculum of the Programme "Processing Technologies of Materials" was developed in compliance with FSES 3 and international requirements.

Good practice

The mission, goals and development strategies of the Master's study programme are formulated, documented and agree with the University's

strategy relating to internationalization, interdisciplinary studies and global competitiveness.

All stakeholders: administration, teachers, students and employers are involved in the identifying goals and developing strategies of the study programmes.

Students' competencies correspond to the target Master's level.

The programme comprises different specialized disciplines: Materials Science, Materials Processing, Welding Technologies, etc. A special attention is paid to methods of developing technologies with the use of computer modeling.

The University is planning to open a joint post graduate programme, which will be a logical continuation of the present double degree programme.

The information about the goals and contents of the programme is regularly published in special booklets in the Russian and German languages and is disseminated in universities, at open-door events, and educational exhibitions.

The detailed information is placed at the websites of both Universities in Russian, German and English and is available to all stakeholders.

Areas for improvement:

- In order to enhance the effectiveness of the academic process it is recommended to increase the number of students to the target admission quota of 12 people. It is also advisable to involve more students from Germany in the education process.
- The cessation of DAAD's funding and the absence of alternative financial sources pose a serious risk for the existence of the study programme.
- The University should seek additional sources of funding student mobility periods in Germany.
- The University and the graduate Department in cooperation with employers should be making an effort to promote the employment of the programme's graduates at industrial enterprises.

PART 2. Concept

The fundamental concept of the double degree study programme «Processing Technologies of Materials» («Metallurgy») consists in training qualified specialists in the sphere of processing technologies of materials. The implementation of the programme will make it possible to acquire broad basic knowledge and practical skills in the analysis of technological processes of production and processing of materials and prognosticating the operating capability of materials in different conditions of their operational use.

Good practice

The study programme is well thought through conceptually and is successfully implemented in the education process. The concept of the programme makes it possible to successfully achieve both specific qualification objectives and general goals. The education content on the whole is fit for purpose and enables students to work in HEIs and research centers after graduation.

Different forms of learning promote harmonious development of personal qualities of learners, such as ability to work in a team, presentation and leadership skills, analytical thinking.

The curriculum and the syllabus of the study programme are modified and updated every year including the enhancement of foreign language teaching. The topics of Master's dissertations for Russian students in Germany are chosen on suggestions from German industrial companies and are financed (fully or partly) by them.

Admission requirements

Admission requirements are regulated by the normative documents on education in the Russian Federation, RF Ministry of Education and Science, and by the admission regulations and requirements for entrance examinations of the University.

Eligible candidates for admission are Bachelor or Master Degree holders in "Metallurgy". All applicants have to achieve level DSH-2 in German upon completion of the first year of the programme. The programme of the first year is taught in Russian at the home institution, and the second year subjects are taught in the foreign language (German or Russian) at the host institution.

The admission rules and requirements established by the University accommodate different categories of applicants with special needs depending on their disabilities.

Special free language courses are organized for foreign students, first year students and students of SPbPU's other programmes.

Structure of study programmes

The programme takes up 2 years and is divided into four semesters. The students are expected to get at least 60 credits a year. The main modules take up 2 semesters, during which students add to their knowledge in science, as well as skills to apply theoretical knowledge to the analysis of processes. The main learning workload of the programme falls on the first year of studies as the second year of studies is spent at the host university.

Modularization and workload

The program comprises 120 credits. There are two compulsory general modules, 5 compulsory professional modules and 3 elective modules. Students are also involved in theoretical and practical research.

The scientific component and a foreign language are emphasized. Core modules provide a comprehensive training to students, as they are not only focused on learning the fundamentals, but also skills development at skills building sessions and laboratory practicum, as well as research guided by a research supervisor.

A wide spectrum of compulsory and elective disciplines enables students to acquire knowledge in different scientific areas and to master disciplines relevant for their future career.

The competences acquired in the programme correspond to the Master's level with the consideration of the requirements of national educational standards and European Qualifications Framework.

Learning context

The Master's study programme utilizes different forms of teaching and learning, which support and complement each other: lectures, skills building sessions and laboratory work, workshops, self study and research. These learning activities ensure that students acquire theoretical knowledge, practical and research skills.

Up-to-date hardware and software is applied, e.g. students take a test in the German language with the help of on-line testing system OnDaF test to evaluate the level of knowledge prior to taking an intensive course of German in Germany.

Additionally, SPbPU organizes free German language courses for the 5th year students of the Programme.

The double-degree Programme's graduates are able to apply for admission to the joint postgraduate training program and upon its successful completion be awarded Candidate of Sciences (Engineering) diploma of the Russian and the German standard

In 2014 the Laboratory of Lightweight Materials and Designs was established. The graduates of the Programme under accreditation can be hired at the Laboratory as soon as they start their work on their Master's dissertation. Currently there are 5 participants in the programme.

Areas for improvement:

- It is recommended to take advantage of mass media and Internet resources to publicize the programme under accreditation and to place comprehensive information about the programme on the University web site.
- The contents of the modules should be made more structured, compact and accessible to students.
- It is advisable to synchronize the curricula of the partner-institutions.

PART 3. Implementation

Good practice

Resources

The Division of Technology in Metallurgy, the IMMET is an advanced unit within the University structure in the area of education quality enhancement. The total number of full-time teachers involved in the programme is 12 people, including 7 Doctors of Sciences and 5 Candidates of Sciences. International experts are also active participants in the teaching process. There are over 30 full-time positions of administrative, technical and support staff at the Division.

The material resources are sufficient for the implementation of this Programme. SPbPU has all the necessary facilities for quality teaching, including learning and support areas, as well as adequate infrastructure, including dormitories, gymnasiums, university administration offices, the Students' Club, the Fundamental Library, the Reading Room, the White (Assembly) Hall for 600 seats, the Conference Hall, resource centres, the Museum Complex, the Expo Centre and other auxiliary facilities.

Rooms are equipped with all the necessary devices, furniture and equipment to provide teaching at a high level and create high-quality social and living conditions for students, teachers and other university staff.

The equipment of university laboratories gives students, postgraduate students and teachers an opportunity to do research work.

Teachers, postgraduate students and students at the Department "Materials Technology and Research" of SPbPU are actively involved in research projects at the laboratory established at the Department "Research and Simulation of Structure and Properties of Metallic Materials".

The classrooms are equipped with projectors, screens, electronic interactive whiteboards and other multimedia systems.

The Departments of both Universities involved in the implementation of the double degree programme are supplied with modern innovative equipment. Research laboratories are established on the basis of both Departments.

Organization and Decision-making processes

Decisions regarding introducing and improving study programmes are taken at the Institute and University, Academic Council and the Rector's level.

Cooperation

BUT and SPbPU signed an agreement on establishing a joint postgraduate programme. The Double Degree Programme's graduates are able to apply for admission to the joint postgraduate training programme and upon its successful completion be awarded Candidate of

Sciences (Engineering) diploma of the Russian and the German standard. Post graduate students are engaged in joint research programmes.

Assessment system

The teachers' work and examination load is distributed equally. Different forms of assessment are used. SPbPU provides special rules and assessment requirements of knowledge/competencies for disabled students, and students in difficult life situations.

Transparency and Documentation

A comprehensive set of documents regulating the assessment of knowledge and competencies of applicants and students has been developed and approved by the University. It includes: details of study programmes, admission regulations and requirements to entrance examinations, admission criteria, details of the learning process, requirements to assessing a level of knowledge and competences of students. The documents are published and are available to students.

SPbPU takes an active part in the procedures of independent assessment of students, e.g. Federal Internet Exam in Higher Education.

Gender equality and equal opportunities

Teacher /student ratio in the Programme is almost 1:1, which is a very high indicator. Since 2011 there have been 29 students on the Double Degree Programme. Among them there are 19 male students and 10 female students. It is 2 to 3 ratio, which is considered to be quite good for a Master's degree programme in "Metallurgy".

Areas for improvement:

- It is recommended to extend the laboratory facilities to make more room for laboratory and research equipment, which will make the work of student groups more effective.
- The University and the major Department should have a closer cooperation with industrial partner companies in order to enhance the academic process and funding of the study programme.

INFORMATION ON THE LEADING TEACHERS OF THE EDUCATIONAL PROGRAMMES

Tutichin Gleb Andreevich

Doctor of Engineering, the Director of research and technological complex "Laser and Welding Technologies", Director of the Russian-German Centre of Laser Technologies, member of Dissertational Boards, Holder of the RF Government award in the sphere of education for research.

Kodzhaspirov Georgy Efimovich

Doctor of Engineering, Professor, specialist in the field of thermo mechanical treatment of metal materials, physico-technological fundamentals of non-isothermal thermo mechanical treatment, organizer of the traditional since 1993 international conferences on new technologies in material science, plastic, thermal and strengthening treatment of materials, parts, and tools. Member of the Association of Metallurgists of Russia, inventor of the USSR, prize winner of the N.A. Minkevich all-USSR competition "For the best work in development of new resource saving technologies and equipment for thermal and thermo chemical treatment"

Kosnikov Gennady Alexandrovich

Doctor of Engineering, Professor, honored worker of science and technology of the Russian Federation; academician of the International Academy of Ecology, Human Safety and Environment Sciences; Vice-president for research work of the scientific enterprise "Association of St. Petersburg Casters"

Tolochko Oleg Viktorovich

Doctor of Engineering, Professor, a visiting scientist in Korean Institute of Material Science and Mechanical Engineering, Changwon, South Korea. The field of research interests includes metal powder industry, composite materials, non-equilibrium and nano-patterned metal systems, their production, properties. Author of more than 90 papers published in peer-reviewed journals, member of the organizing committees of four international research and technical conferences, member of two dissertation councils

Anastasiady Grigory Paneodovich

Doctor of Engineering, Professor, former vice-rector of St. Petersburg Institute of Mechanical Engineering, winner of the Russian Federation President's Prize in the field of education for year 2002.

Mikhailov Veselin Georgievich

Doctor of Engineering, Professor, head of the Lightweight Materials and Structures Laboratory of SPbPU, director of the Research Centre of Lightweight Materials, head of the department of connection and welding technologies of Brandenburg University of Technology (BTU), Scientist-counselor of the Federal Ministry of Education on the Innovative program 2020, Expert-reviewer of the German and Bavarian Society of Researchers Foundation, Expert reviewer of Alexander von Humboldt Foundation.

Tsemenko Valery Nikolaevich

Doctor of Engineering, professor, Head of Technology and Material Science (TMS) Department, author of over 130 publications

Karkhin Victor Akimovich

Doctor of Engineering, professor of the Department "Welding and Laser Technologies"

Ganin Sergey Vladimirovich

Candidate of Technical Sciences, associate professor specializing in rheologic properties of nano-structured materials, physical and mathematical modeling of metals, a grant winner of St. Petersburg Government; the author of over 25 publications;

Naumov Anton Alekseevich

Candidate of Technical Sciences, associate professor the RF President grant winner of 2012 and 2014.

Mishin Vasily Viktorovich

Candidate of Technical Sciences, the RF Ministry of Education grant winner of 2012 for the theme "Research and mathematical modeling of the structure formation and fracture mechanism of high-purity nano-crystal beryllium in plastic deformation and thermal processing", the RF President grant winner of 2015.

Ermakov Sergey Alexandrovich

Candidate of Technical Sciences, senior lecturer at the Department of "Welding and Laser Technologies"

Topolyansky Pavel Abramovich

Candidate of Technical Sciences, associate professor, the Head of LLC «Plazmocenter», organizer of annual international practice and research conferences «Technologies of repair, restoration and strengthening of machine parts, instruments and technological equipment».

Kolbasnikov Nikolay Georgievich

Doctor of Engineering, Professor, author of 9 patents and author's certificates.

PART 4. Quality management

In the study programme management the information systems are used which focus on the support of the learning process. A number of quality assurance tools are in place in the University and the Institute which are present in the module system: Students Management, Learning Process, Student Academic Progress Records and SP monitoring. However, it was noticed that the existing quality management system does not have the circular structure (beschlossene Regelkreise), which could bring about a constant enhancement of education quality.

Good practice

In 2015, SPbPU made its new webpage. The webpage structure and navigation blocks faced comprehensive changes. The usage of the "flexible modular reference system" made the webpage available from a wide range of devices, from mobile phones to wide screens, with all pre-set functions available.

In 2015, there has been on-going work on the introduction of the Galaktika University Management information system based on the Galaktika ERP platform and the Galaktika Class Schedule based on the Galaktika Xafary platform. So far, the following modules have been in pilot operation: Students Management, Learning Process and Student Academic Progress Records.

For the first time it has become possible to provide the information on students' performance through the learning-process automation system.

There was a pilot effort to generate Masters' diplomas with the help of the system.

Sensor terminals to access the University timetable are installed at the main building and at the R&D building. The time-table is also available via the SPbPU mobile app.

Follow up on the results of quality assurance procedures

Internal evaluation of the Study Program (SP) is performed by monitoring covering all main aspects of its provision and intended to improve and ensure the training quality. To do this, the project groups have been formed.

The monitoring results are published in digests of the series "Quality Management at the Polytechnic University. The SP updating procedures were brought in compliance with the quality management system standard of SPbPU "Updates to Principal Study Programs (Review, Changes, Revision)" with the usage of the "Monitoring of Principal Study Programs" methodology.

To control education quality different kinds of Internet testing proposed by the RDI for Education Quality Monitoring are used. The results of the Internet-tests of SPbPU students which were conducted by the Quality Management Centre in 2014/2015 school year under the projects of the

RDI for Education Quality Monitoring were also presented in their summary forms in the issues of the series "Quality Management at Polytechnic University." The SP QMS considers the Internet testing for students the most important stage in the education quality monitoring and a measure to improve the performance and the quality in higher education.

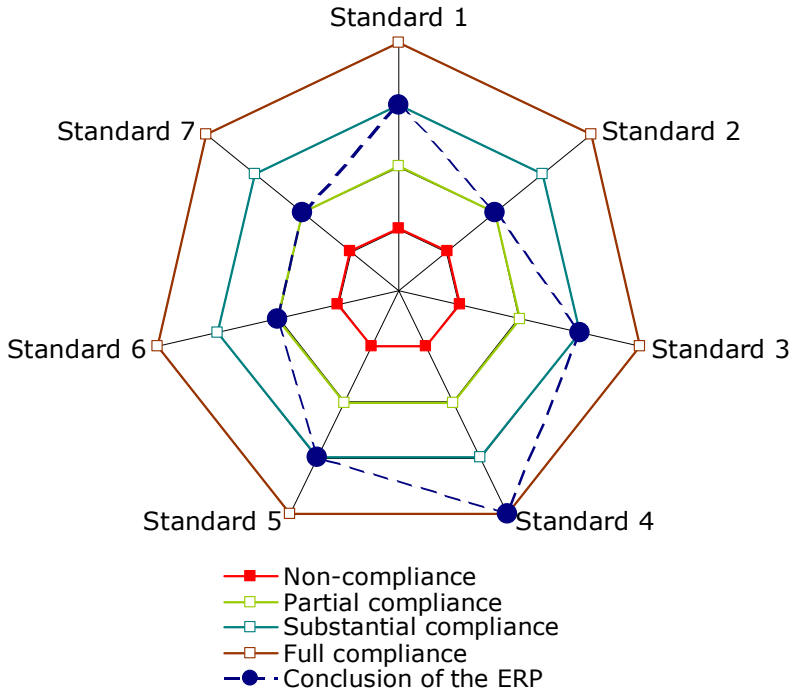
Decisions about the quality assurance and improvements are made based on the findings from the internal monitoring and external audits. All activities are in line with the approved "Action Plan to Prepare FSAEI HE Saint-Petersburg State Polytechnic University for Development, Implementation and Certification of Quality Management System in T&E against GOST ISO 9001-2011 (ISO 9001:2008)" The Test-Saint Petersburg, LLC was chosen as a certification agency. It is not only a recognised leader in the North-West Region, but also at the national level. According to the Audit Plan, in December 2014, a certification audit was conducted.

A prospective plan was drawn up to involve the SPbPU institutions into the quality management system development, followed by the QMS certification. Upon completion of this project, a long-term programme will be made for the period until 2020 to introduce the QMS in all SPbPU structural units.

Areas for improvement:

- It is necessary to further improve the quality management system. The students' questionnaires should be differentiated according to the Bachelor's and Master's levels, and there also should be surveys of graduates and employers.
- When designing and conducting surveys of students and employers, and also when analyzing the results and providing feedback it is recommended to involve representatives of students, graduates and employers.
- The HEI should document the outcomes of the internal quality assurance system (results of surveys/questionnaires, student workload analysis, learning outcomes and graduates' employment analysis), which will be taken into consideration for further improvement of the programme.
- Measures developed on the survey outcomes should be documented and published transparently, including their publishing on the University website.

DISTRIBUTION DIAGRAM OF THE EXTERNAL REVIEW OUTCOMES



- Standard 1. Policy (mission, vision) and procedures for quality assurance
- Standard 2. Approval, monitoring and periodic review of programs and qualifications
- Standard 3. Assessment of student learning outcomes / competencies
- Standard 4. Quality assurance and competencies of teaching staff
- Standard 5. Learning resources and student support
- Standard 6. Information system providing effective implementation of the study program
- Standard 7. Public information

CONCLUSION OF THE EXTERNAL REVIEW PANEL

Based on the self-evaluation report analysis, documents and data submitted, interviews with the representatives of the professional communities, students, post graduates, doctor-degree students, staff and administration of the educational institution the External Review Panel came to the conclusion that the double degree educational programme "Processing Technologies of Materials " (22.04.02) for the specialty "Metallurgy" (M.Sc.) delivered by Peter the Great Saint – Petersburg Polytechnic University **substantially complies** with the standards and criteria of joint international accreditation (accreditation by the National Centre for Public Accreditation NCPA together with the Accreditation, Certification and Quality Assurance Institute ACQUIN) .

The External Review Panel recommends the National Accreditation Board **to accredit the double degree Master's programme "Processing Technologies of Materials" (22.04.02) for the specialty "Metallurgy" (M.Sc.) delivered by Peter the Great Saint –Petersburg Polytechnic University with conditions and recommendations.**

SCHEDULE OF THE SITE VISIT OF THE EXTERNAL REVIEW PANEL

Montag Понедельник	19 Октября 2015/ 19 Oktober 2015	
Uhrzeit Время	Gespräch/Aktivität Мероприятие	Ort/Raum Место
В течение дня	Ankunft in St.-Petersburg/ Прибытие в Санкт-Петербург	Flughafen Pulkovo in St.-Petersburg/ Аэропорт Пулково
В течение дня	Transfer zum Hotel/ Трансфер в отель Ankunft im Hotel / Размещение в отеле	Hotel Ambassador Отель Ambassador
16.30 – 18.00	Interne Besprechung der Gutachter (gemeinsam) / Внутреннее заседание экспертов (совместно)	Konferenzraum/ Конференц-зал отеля «Премьера»
18.15 – 19.45	Interne Besprechung der Gutachter (parallel) / Внутреннее заседание экспертов (по кластерам)	Konferenzraum/ Конференц-зал отеля
20.00	Gemeinsames Abendessen / Ужин экспертов	Hotelrestaurant/ Ресторан в отеле

Dienstag Вторник	20 октября 2015/ 20 Oktober 2015	
Uhrzeit Время	Gespräch/Aktivität Мероприятие	Ort/Raum Место
08.30	Transfer zur HS / Выезд в ВУЗ, Гражданский проспект 28а	16 корпус
9.00 – 10.30	Gespräch mit der Hochschulleitung (gemeinsam) / Встреча с руководством университета: Ректор и Проректоры, ответственные за аккредитацию (совместно) Teilnehmer: Anhang /Список: приложение	Аудитория 220
10.45 – 12.45	Gespräch der Gutachtergruppe mit den Programmverantwortlichen und Lehrenden der Studiengänge (parallel) / Первая встреча с преподавателями Teilnehmer: Anhang / Список: приложение	Аудитория 220 , зона 1
13.00 – 14.00	Mittagessen / Обед	Mensa / Столовая
14.00 – 15.00	Interne Beratung der Gutachtergruppe / Внутреннее заседание экспертов	Аудитория 217
15.15 – 16.45	Gespräche mit den Studierenden / Беседа со студентами	Аудитория 220 , зона 1
17.00 – 18.00	Gespräch mit Absolventen (parallel) / Встреча с выпускниками (по кластерам) Teilnehmer: Anhang / Список: приложение	Аудитория 220 , зона 1
18.15 – 19.00	Interne Besprechung der Gutachtergruppe / Внутреннее заседание экспертов	Аудитория 217
19.00	Transfer zum Hotel / Выезд в отель	Hotel / Отель
ab 20.00	Internes Abendessen der Gutachtergruppe / Ужин (только эксперты)	Restaurant im Hotel /Ресторан в гостинице

Mittwoch	21 октября 2015/ 21 Oktober 2015	
Среда		
Uhrzeit Время	Gespräch/Aktivität Мероприятие	Ort/Raum Место
08.30	Transfer zur Hochschule / Выезд в ВУЗ	
9.00 – 11.00	Gespräche mit den Mitarbeitern der Abteilung für Didaktik und Lehre sowie des Zentrums für QM (gemeinsam)/ Встреча с представителями Департамента учебно-методической деятельности, Центра менеджмента качества (совместно три кластера)	Главное здание, ул. Политехническая, 29 Аудитория 130
11.00 – 11.30	Bibliothek (gemeinsam) / Библиотека (совместно три кластера)	Главное здание
11.30 – 11.45	Transfer zur Hochschule für Werkstoffkunde, Maschinenbau und Transport/ Переезд в Институт материаловедения, машиностроения и транспорта	
12.00 – 12.30	Gespräche mit dem Leiter der Hochschule, dem stellvertretenden Leiter für internationale Angelegenheiten, Leitern des Programms (parallel) Встреча с директором института, заместителем директора, руководителями программы Teilnehmer: Anhang / Список: приложение	1 учебный корпус, Аудитория 409
12.45 – 13.45	Mittagessen / Обед	столовая вуза
14.00 – 15.00	Rundgang durch das Institut: Besichtigung des Labors /Экскурсия по институту. Лаборатория «Исследование и моделирование структуры и свойств металлических материалов»	Хим. корпус, Аудитория 24
15.15 – 16.15	Zweites Gespräch mit den Lehrenden / Programmverantwortlichen (parallel) / Вторая встреча с преподавателями Teilnehmer: Anhang / Список: приложение	1 учебный корпус Аудитория 335
16.30 – 17.30	Gespräch mit Arbeitsgebern (parallel) / Встреча с работодателями Teilnehmer: Anhang / Список: приложение	1 учебный корпус Аудитория 335
17.45 – 19.00	Interne Besprechung der Gutachtergruppe / Arbeit am Bericht. Ausfüllen von Bewertungsbögen Внутреннее совещание экспертов. Работа с отчетом. Заполнение оценочных листов.	1 учебный корпус Аудитория 335
Ab/c 19.00	Transfer zum Hotel / Выезд в отель	

Donnerstag	22 октября 2015/ 22. Oktober 2015	
Четверг		
Uhrzeit Время	Gespräch/Aktivität Мероприятие	Ort/Raum Место
08.00	Transfer zur Hochschule / Выезд в ВУЗ	16 корпус, Ресурсный центр
08.30 – 11.00	Interne Besprechung der Gutachtergruppe: Gutachterbericht, Empfehlung an die Akkreditierungskommission, Fazit für die abschließende Besprechung mit der HS-Leitung/ Внутреннее заседание комиссии: работа с отчетом, подведение предварительных итогов посещения вуза, подготовка устного доклада комиссии по его результатам	Аудитория 217
11.00 – 12.00	Abschließendes Gespräch mit der HS-Leitung/ Итоговая встреча с руководством вуза	Аудитория 220
12.00 – 13.00	Mittagessen/ Обед	столовая вуза
	Transfer zum Flughafen/ Трансфер в аэропорт	