

FEDERAL STATE AUTONOMOUS EDUCATIONAL INSTITUTION OF HIGHER
EDUCATION «PETER THE GREAT SAINT PETERSBURG POLYTECHNIC
UNIVERSITY»

INSTITUTE OF INDUSTRIAL MANAGEMENT, ECONOMICS AND TRADE

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SELF-EVALUATION REPORT

ON THE CLUSTER OF STUDY PROGRAMMES IN THE MAJOR
«Business informatics» (38.03.05, 38.04.05)

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ment, Economics and Trade

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INTRODUCTION

Within the framework of the modernization of the national education system, the quality of training specialists is becoming a priority. The goal of the given report is to identify compliance of implementing the cluster of study programmes in the major "Business informatics" (38.03.05, 38.04.05) of FSAEI HE «Peter the Great Saint Petersburg Polytechnic University» with the requirements of the European Standards and Guidelines (ESG) adopted by the European Association for Quality Assurance in Higher Education (ENQA) in the following areas:

- policy and vision for education quality assurance;
- design, approval, monitoring and improvement of basic professional study programmes (BPSP);
- admission, teaching, progress assessment and recognition of student achievements;
- competence of teaching staff;
- adequacy and accessibility of learning resources, and student support system;
- information management system; public information about the quality of education;
- internal and external monitoring for quality assurance of BPSP.

Self-evaluation is a necessary preliminary stage of external evaluation of basic professional study programmes (BPSP). Then goal of self-evaluation is to establish the quality of graduates' education and training of the delivered study programmes in accordance with the NCPA's standards of public accreditation, which are harmonized with international standards and guidelines for quality assurance in higher education.

The self-evaluation procedure involves analysis of the content, level and quality of graduates' education, the content of the delivered BPSP and conditions of their implementation, assessment of BPSP dynamics, material and technical resources, compliance of the delivered study programmes with the requirements of the Federal State Educational Standard of Higher Education (FSES HE) and requirements of the Self-imposed Educational Standard developed by the University (SIES).

The provisions, outcomes and conclusions of the self-evaluation report are brought to the attention of the stakeholders, and also presented to the public via posting on the official site of the Institute of Industrial Management, Economics and Trade of FSAEI HE «Peter the Great Saint Petersburg Polytechnic University» (<https://clck.ru/TqDa9>).

I GENERAL INFORMATION

Table 1 – General information about the 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 Science and Higher Education of the Russian Federation</i>
The year of foundation	<i>1899 — Polytechnic Institute in St. Petersburg</i>
The current accreditation status :	
Location	<i>195251, Saint Petersburg, Polytechnicheskaya ul., 29</i>
Rector	<i>Rudskoy Andrey Ivanovich, Doctor of Science (Engineering), professor</i>
License	<i>Series 90Л01 No.8982 reg. No. 1949 of February 19, 2016, perpetual</i>
State accreditation	<i>State accreditation certificate Series 90A01 No. 3118, reg. No.2973 of December 26, 2018 valid till December 26, 2024</i>
Number of students (full-time, part-time)	<i>32638</i> <i>among them:</i> <i>Full-time 25686</i> <i>Part-time 1046</i> <i>Extramural 5906</i>

Table 2 – Information about the study programmes under accreditation

Study programmes	<i>«Business informatics» (38.03.05), «Business informatics» (38.04.05)</i>
Level/ Period of study	<i>Master / 2 years Bachelor / 4 years</i>
Structural unit (Head)	<i>Institute of Industrial Management, Economics and Trade (director – Shchepinin Vladimir Engelevich, Candidate (PhD) of Education, associate professor)</i>
Major departments (Heads of the departments)	<i>Graduate School of Business and Management (director – Ilyin Igor Vasilyevich, Doctor of Economics, professor)</i>
Dates of site visit	<i>April 20-22, 2021</i>
Person responsible for accreditation	<i>Zima Elena Alexeyevna, Candidate (PhD) of Engineering, associate professor, director of the Centre for Quality Assurance</i> <i>Chernikova Anna Vladimirovna, Candidate (PhD) of Engineering, associate professor, deputy director for methodology and academic affairs of the Institute of Industrial Management, Economics and Trade, associate professor of the Graduate School of Service and Trade</i> <i>Ilyashenko Oksana Yuryevna, Candidate (PhD) of Education, associate professor of the Graduate School of Business and Management, head of the study programmes 38.03.05 и 38.04.05 Business informatics</i>

The federal state autonomous educational institution of higher education «Peter the Great Saint Petersburg Polytechnic University» (SPbPU) was founded as the Polytechnic Institute in Saint Petersburg on February 19, 1899, in accordance with the Supreme Approval of Emperor Nicholas II upon the report of S.Y. Witte, the Minister of Finance of Russia, in which he proposed to establish a polytechnic institute in St. Petersburg.

In 2010 SPbPU was awarded the category of a national research university, which recognized its role and capabilities both in the field of professional education, and in multidisciplinary R&D.

In 2013 Peter the Great Saint Petersburg Polytechnic University was among 21 Russian universities which were given subsidies of the Russian Ministry of Education and Science for competitiveness enhancement of leading Russian universities among global research and education centres.

By the order of the Ministry of Science and Higher Education No. 342 of April 1, 2015, SPbPU was reorganized by merging with the Federal State-owned Education Institution of Higher Education « St. Petersburg State University of Economics and Trade» (SPbUSET).

The position of SPbPU in various national and international rankings is presented in table 3, the position in University Rankings by Economic and Business Subjects is presented in table 4. More detailed information about SPbPU position in rankings for the period of 2013-2021 in dynamics is provided on the University website (https://5-100.spbstu.ru/en/spbspu_rankings/).

Table 3 – SPbPU position in rankings

General ranking	2020	2021
QS World University Rankings	439	401
QS EECA	47	45
THE World University Rankings	501-600	301-350
THE Best universities in Europe	239	143
THE University Impact Rankings, Overall	37	N/A
THE Impact Rankings 2020 by SDG: no poverty	57	N/A
RUR World University Ranking	435	N/A
RUR Teaching Ranking	285	N/A
RUR Academic Ranking	481	N/A
RAEX Russian University Ranking	8	N/A

Table 4 – SPbPU position in University Rankings by Economic and Business Subjects

Ranking: subject/major	2020	2021
QS World University Rankings by Subjects: Subject Social Sciences - Economics & Econometrics	401-450	301-350

Ranking: subject/major	2020	2021
QS Subject, Social Sciences, Business & Management Studies	-	451-500
THE World University Rankings by subject: business and economics	251-300	251-300
RAEX: Russian University Ranking in the field of «Economics and Management»	11	N/A

Currently, the structure of SPbPU is comprised of 41 graduate schools and departments, 24 fundamental departments affiliated to 12 institutes, which implement programmes of higher education, Institute of Secondary Vocational Education, National Science Lyceum, continuing education units, Military Training Centre, NTI SPbU Competence Centre «New Production Technologies», complex of research centers, including Joint Institute of Science and Technology, research and educational centres, a number of specialized research and production units, sport and recreation complex, SPbPU affiliate «The Institute of Nuclear Power Engineering in Sosnovyi Bor».

SPbPU has the Representative Office in Shanghai, P.R.China.

The structure of SPbPU is approved by the Academic Council and presented in the register of departments and units on the University portal (<https://english.spbstu.ru/>). Management of structural divisions and units, rules of their interaction, their activity is regulated by duly approved provisions.

In accordance with the education license, SPbPU implement study programmes by 17 secondary vocational majors, 59 Bachelor's degree majors, 57 Master's degree majors, 11 Specialist majors and 24 PhD majors. Currently, the University is implementing 149 Bachelor's degree programmes, 12 Specialist's degree programmes, 175 Master's degree programmes, and 84 PhD programmes.

The University campus is located in the north-west of Saint Petersburg; it involves 44 academic buildings, 18 dormitories, the House of Scientists and the sport and recreation complex. The campus is located in a splendid park. The total campus area amounts to 120 hectares, covering four metro stations.

The Institute of Industrial Management, Economics and Trade (IIMET) is the largest institute in SPbPU by enrollment. IIMET is the successor of the Economics Department of the Polytechnic Institute, established in 1899. Initially, it was expected to be the «incubator for new management staff and the centre of Russia's scientific and technological policy». In March 2016, SPbPU Institute of Engineering and Economics was merged with departments of St. Petersburg State University of Economics and Trade, which underwent reorganization. The Institute gained its today's name. The traditional departments were changed into graduate schools; this format ensured implementation of educational activity in close relation with the established scientific schools, evolving in key areas of economics.

IIMET represents its developed scientific and educational structure, which involves three major graduate schools – Graduate School of Industrial Economics, Graduate School of Business and Management, Graduate School

of Service and Trade; Department of Fundamentals of Economics and Management, whose main goal is to train and educate 1 and 2-year students, developing the economic thinking in them; «System dynamics» research laboratory, «Regional Metropolitan Economy» basic department of the Institute of Regional Economic Problems of RAS; «Financial Monitoring» basic department of the Federal Financial Monitoring Service; Centre for Continuing Education.

IIMET provides multi-level training and education, implementing main study programmes in three enlarged groups of majors and areas of study for Bachelor's degree, Master's degree, Specialist's degree programmes 27.00.00, 38.00.00, 43.00.00, and also two enlarged groups of majors and areas of study for PhD programmes 19.00.00, 38.00.00. The total active enrollment in IIMET for February 01, 2021, amounts to 7535 students, including 1581 international students. In accordance with IIMET relevant areas of training and education, the Centre for Continuing Education implements a range of occupational enhancement programmes and programmes of professional retraining.

To fulfil administrative, organizational, academic, methodological functions related to planning, preparation, management, implementation and support of study programmes, including control of education quality, IIMET established the Directorate of Study Programmes, which is an academic and administrative division of the Institute. The responsibilities of the Directorate of Study Programmes include the information support of students in terms of education and enrollment document circulation. The staff of the Directorate of Study Programmes involve 16 specialists. IIMET set up the International Office to support international students and organize the target-oriented work within the framework of international cooperation and academic mobility.

The work of the Directorate of Study Programmes and International Office is organized via IIMET Deputy directors of student affairs and the Deputy director for international affairs, student group monitors and specialists for teaching and learning enhancement.

In terms of the quality assurance policy in the area of international activity, IIMET shows high competitiveness due to the positive dynamics of internationalization of study programmes, namely their networking form; a diversified pool of academic partners and sustainable partnership in a variety of scientific and academic spheres; an effective approach to education of international students and administration of international education; intensification of international academic mobility; an effective mechanism in attracting international researchers, lecturers and teachers.

The close integration of educational, international and research activities in IIMET became a prerequisite for implementation of major international academic and research projects. In close cooperation with international offices and engineering institutes IIMET initiated and performed more than 6 international research and educational projects within the programmes of the cross-border cooperation with Finland -«Interreg Baltic Sea Region», «Erasmus+».

The cluster of study programmes represents one of most significant segments of academic and research activity.

The enrollment dynamics for the cluster of study programmes under accreditation for the period of 2016-2021 is presented in table 5.

Table 5 – Enrollment dynamics for the cluster of study programmes under accreditation for the period of 2016-2021

Enrollment	01.02.17	01.02.18	01.02.19	01.02.20	01.02.21
Total number of students	513	535	591	554	564
Citizens of the Russian Federation and fellow-citizens from foreign countries	482	494	529	498	498
Foreign students	31	41	62	56	66

Admission dynamics for the cluster of study programmes under accreditation in the period of 2016-2020 is presented in table 6.

Table 6 – Admission dynamics in 2016-2020

Major	2016	2017	2018	2019	2020
38.03.05 Business informatics	113	147	131	154	115
38.04.05 Business informatics	12	55	44	51	46

II STANDARDS AND CRITERIA OF PUBLIC ACCREDITATION OF STUDY PROGRAMMES OF HIGHER EDUCATION

2.1 Standard 1. Policy (mission, vision) and procedures for quality assurance

Availability of a documented inner quality assurance system providing continuous enhancement of quality in accordance with the development strategy of the educational institution.

In order to accomplish strategic goals and meet the requirements of international education, SPbPU integrates a number of European approaches in the system of quality assurance. With the participation of all internal stakeholders, special attention is paid to the implementation of standard "Policy and procedures for quality assurance".

Inner quality assurance system in SPbPU is implemented through the Educational Policy of SPbPU (<https://imet.spbstu.ru/en/documents/>) and goes in line with the University's Development Strategy (https://5-100.spbstu.ru/en/program_info/). Internal normative acts describing and monitoring processes and procedures of quality assurance are available on the website (https://dep.spbstu.ru/normativnye_dokumenty/, <https://imet.spbstu.ru/en/documents/>). Inner quality assurance in SPBSTU involves the system of quality evaluation approved by the Regulations on Internal System of Education Quality Evaluation (<https://imet.spbstu.ru/en/documents/>). Regulations focus on the combination of procedures used in assessment of education and its outcomes, and describe the process of obtaining feedback on the education quality from internal and external stakeholders (students, graduates, teaching staff, key employers).

In accordance with the internal normative acts, SPBPU annually conducts the following procedures as a part of an independent quality assessment programme:

- independent performance evaluation of the faculty involved in the implementation of study programmes (voluntary performance assessment)
- independent student survey "Quality of Study Programmes", monitoring the level of stakeholders' satisfaction with the quality of education;
- opinion surveys among employers and graduates on their satisfaction with the quality of education.

"The Best Teacher According to Students" contest is currently being developed in SPBPU.

Based on the results obtained, SPBSTU analyses the effectiveness of the implementation of the quality assurance policy and takes measures to ensure progress in the system of education and student's training.

Results of independent surveys and other evaluation procedures are discussed at the sessions of the Education Board (<https://clck.ru/ThNve> (in Russian)), and the SPBSTU Academic Council.

Institute of Industrial Management, Economics and Trade operates in accordance with the Action Plan (Road map) on Strategic Development 2016 – 2021(<https://imet.spbstu.ru/en/documents/>). The Academic Coun-

cil inspects fulfilment of objectives established in the Action Plan and develops a set of measures aimed at increasing efficiency of the Institute's performance and self-evaluation in terms of quality assurance policy.

Participation of all stakeholders (administration, teaching staff, students, employers, employer associations, branch ministries and departments – key partners in employment of graduates) in developing and implementing a quality assurance policy through relevant structures and processes.

Students of SPbPU engaged in development and implementation of the quality assurance policy are represented by the Student's Committee on the Quality of Education – a department of the Primary Students' and Postgraduates' Union of SPBSTU, which makes part of the National Education Union of the Russian Federation.

The Committee's mission is to ensure conditions for the students to implement their right to participate in the quality assurance procedures in order to enhance efficiency of study programmes.

The Committee aims to:

- participate in the quality assurance processes and procedures of the SPBSTU study programmes;
- facilitate the process of independent quality assessment, including student surveys;
- assess the educational demands of students via regular surveys and opinion polls on the improvement options for University;
- develop suggestions for enhancing the quality of education with due regard for the academic, scientific and professional interests of students;
- assist the University's administration with keeping students aware of the education policies, standards, curriculum, study and training programmes and plans;
- inform students about the regulatory framework of education;
- interact with the structural subdivisions of the University and public organizations operating on the SPBSTU basis in order to organize academic and scientific events;
- organize collection and processing of the students' feedback on the education-related problems.

Employers are involved in development and implementation of study and academic training programmes, and in projecting expected outcomes. Management, including the academic course programme, curriculum, education and training plan, final certification programme and evaluation criteria, underwent the employer review, which is documented by the report on the General overview of the study programmes.

Employers are vastly engaged in education and often take part in sessions of the Graduate School of Business and Management on the issues of the study programme update, following the goals of sustainable development.

Online study programmes, including international ones, are in compliance with partner-universities and industrial partners via negotiating, developing and reviewing curricula, concluding relevant agreements.

In particular, Master's degree programme 38.04.05_02 «Business Engineering» (international double degree programme) is implemented in the

English language in accordance with the cooperation agreement with Lappeenranta University of Technology (LUT), Finland. Thus, as a result of competitive selection, the students who are admitted for this programme will obtain two graduation certificates (<https://www.lut.fi/web/en/>).

Participation of all structural units of an educational institution in quality assurance processes and procedures.

Inner quality assurance processes and procedures are monitored and implemented at three fundamental levels, including the University, the Institute and all participants of the educational process (faculty, students, parents (customers)).

Quality assurance of the study programme is provided by the SPBSTU system of internal quality assessment that covers the range of conditions, including the educational infrastructure, academic resources, qualifications of the faculty, quality of programmes and teaching, competency of the graduates.

In SPbPU, Vice-Rector for Education and Vice-Rector for International Affairs are responsible for the quality assurance.

Quality assurance processes and procedures at the university level are implemented by the following subdivisions: Department for Study Programmes, International Education Office, Quality Assurance Centre, Open Education Centre, Library Complex, Career Centre and Pre-University Training.

At the Institute level, the issues related to quality assurance are regularly discussed by the stakeholders at the sessions of the Institute's structural subdivisions – departments and Graduate schools, Academic Council and Education Boards of the Institute of Industrial Management, Economics and Trade.

Conclusions on Standard 1:

Strengths:

- involvement of SPbPU administration in continuous enhancement of quality in accordance with the development strategy of the university;
- appropriately documented inner quality assurance system, continuous improvement of the local regulatory framework in accordance with the development goals of the university;
- Student's Committee on the Quality of Education as an actor ensuring quality assurance processes at the university.

Areas for improvement:

- formal participation of employers and professional communities in SPbPU quality assurance policy;
- development of the system for independent assessment of education on behalf of the teaching staff.

2.2 Standard 2. Design and approval of study programmes

Availability and accessibility of clearly defined, documented, approved and published goals and objectives of the study programme and expected learning outcomes and their correspondence to the mission, goals and objectives of the educational institution.

The main strategic goal of SPbPU National Research University is to modernize and develop the Polytechnic University as a competitive research

and educational university of a new type integrating multidisciplinary scientific research and world-class technologies, and belonging to the leading group of world universities.

Polytechnic University sees its overall mission both in ensuring its competitive advantages in the national and international markets of educational services and in reliable partnership with the state in the enhancement of Russia's economic capacities and international influence. To do this, it aims to become a globally competitive research and education Centre, join the world's top universities, make provisions for forward-looking training of new generations of specialists, and play an instrumental role in technological modernization of strategic industries by employing multidisciplinary researches and advanced pan-industry technologies. The road map of SPbPU development is placed on the university website (https://5-100.spbstu.ru/en/program_info/).

The strategic goals of SPbPU in education and main mechanisms of their achievement are defined in the Education Policy of the University (<https://imet.spbstu.ru/en/documents/>).

The mission of the Institute of Industrial Management, Economics and Trade is to generate and disseminate prospective knowledge and technologies, to form a new generation of internationally recognized specialists with integrated managerial, economic, engineering and technical competencies who will implement the tasks of innovative development of the Russian economy, highly demanded in the labour market.

The strategic goal of the IIMET is to develop, in cooperation with technical institutes, a model for advanced engineering and economics education in technical universities in Russia, a system to manage its implementation, providing smooth adaptation of study programmes with planning periods of 4 years (Bachelor), 6 years (Bachelor and Master), and 9 years (Bachelor, Master, Postgraduate).

In order to achieve the mission and the strategic goal, there are target performance indicators, which are interrelated with the performance indicators of the university. The values of the indicators are analyzed annually, adjusted taking into account their actual achievement in the Strategic Development Roadmap and made publicly available on the IIMET website (<https://imet.spbstu.ru/en/documents/>).

The aims and strategies for the development of study programmes are subordinate to the mission and strategic objectives of the institute and the university.

One of the institute's greatest strengths is its well-established tradition of economic education and its unique opportunity to cooperate with SPbPU's technical institutes.

The main objective of the accredited study programmes of the Business Informatics cluster is to train professionals in enterprise management with a focus on digital technologies using advanced theoretical and practical achievements in the field of enterprise architecture, business process reengineering, project management, IT service management, development, implementation and maintenance of information systems.

The goals and corresponding objectives of the basic study programmes are elaborated taking into account modern trends in the development of

management systems and digital technologies, employers' expectations for the competences of future specialists. The goals and objectives of a study programme are formulated and, if necessary, adjusted by its head with the participation of the leading teachers and representatives of the professional community. Each major study programme in "Business Informatics" (38.03.05, 38.04.05) is reviewed by an independent party - representatives of the professional community - for its objective assessment for corresponding to the industry and labour market requirements.

All goals, objectives and missions of study programmes are documented according to the procedures established by the university. Passports of the main study programmes and promotional materials, reflecting the goals and main content of training of students in "Business Informatics" (<https://imet.spbstu.ru/en/programs/>) are publicly available on the IIMET website. The information on study programmes in Business Informatics (38.03.05, 38.04.05) is also presented in printed materials, on information boards inside and outside the university.

Availability of procedures for design, approval and revision of a study programme (including expected learning outcomes) with the account of the development of science and industry, and also with the consideration of stakeholder opinions (administration, teaching staff, students, employers).

Study programmes are developed, coordinated, approved, revised and stored in accordance with the Regulation on the Basic Study programme of Higher Education - Bachelor's programme, Specialist's programme, Master's programme, or postgraduate training programme (<https://imet.spbstu.ru/en/documents/>), which also establishes requirements for the structure, content and design of basic study programmes of higher education.

New study programmes are opened in accordance with the established procedure (<https://imet.spbstu.ru/en/documents/>), which is based on the analysis of their competitiveness and carried out with the involvement of the Educational Quality Centre.

The work on continuous improvement of the accredited cluster of study programmes is done in accordance with the changes in the federal state educational standards (FSES), professional standards, and employers' needs in order to improve the learning content and enhance the practical orientation of the programmes. Curricula, programmes of disciplines and traineeships are updated annually with due consideration of the stakeholders' opinions. This is in line with the mission and objectives of the university, the institute and the main study programmes of the accredited cluster.

The basic professional study programmes (BPSP) are developed by the Graduate Schools and are discussed at the meeting of the Graduate School, at the Methodological Council of the IIMET, approved by the Academic Council of the IIMET, and approved by the Academic Council of SPbPU.

The overall coordination of the educational process, preparation of normative documents, monitoring, control of the development and implementation of study programmes at the university is carried out by the Directorate of Core Study programmes (DCEP).

The curricula for each study programme are developed on the basis of a competence-based approach, taking into account the best practices of Russian and foreign higher education institutions.

The syllabi and traineeship programmes correspond to the structure of the curriculum and have to include the requirements for learning outcomes, analysis of the place and role of the disciplines and traineeship in the formation of competences, characteristics of the content of disciplines and traineeships, learning technologies, and the attestation rules.

In the context of the two-tier education, the cluster of study programmes under accreditation ensures the continuity of curricula (Bachelor's, Master's), given the set of formed competences, the need to deepen the knowledge and obtain additional competences according to specific areas of focus.

In order to draw up a list of elective disciplines to be included in the Soft Skills Module of the 2021 Bachelor's and Specialist's degree programmes, DCEP announced a competition among the teaching staff of SPbPU institutes. To select the disciplines, a commission was established, which included, among others, deputy directors of institutes for educational activities, heads of study programmes, and representatives of the Student Commission on Educational Quality.

Consideration of the requirements of professional standards (if available), of labour market, of national qualification framework descriptors of the RF in the study programme.

In accordance with the Regulations on the basic study programme of higher education - Bachelor's programme, Specialist's programme, Master's programme, Postgraduate programme (<https://imet.spbstu.ru/en/documents/>), the development of study programmes in SPbPU is based on the requirements of professional standards (if available).

The programmes of the Business Informatics cluster are implemented with due regard of the continuity of Bachelor's-Master's education levels and compliance with professional standards. The requirements of professional standards are taken into account to develop the competences of graduates of Bachelor's and Master's programmes in Business Informatics (Table 7).

Table 7 - Compliance of Business Informatics cluster programmes with professional standards

Name of the BPSP programme	Name of professional standard
38.03.05_01 Enterprise architecture	06.016 "Information Technology Project Manager" 06.015 "Information Systems Specialist"
38.03.05_02 Electronic business	06.016 "Information Technology Project Manager" 06.012 "Information Technology Product Manager"
38.04.05_02 Business Engineering	06.016 "Information Technology Project Manager" 06.014 "Information Technology Manager"
38.04.05_05 Digital marketing and e-business	06.016 "Information Technology Project Manager" 06.012 "Information Technology Product Manager"
38.04.05_04 Digital Healthcare	06.016 "Information Technology Project Manager" 07.007 Process Management Specialist (Health Services Organisation)

The objectives of the study programmes of the accredited cluster are aligned with the descriptors of the National Qualifications Framework (NQF).

The changing needs of the labour market are analyzed and new professional opportunities for graduates are researched through continuous interaction with employers, international academics in enterprise management based on the architectural standards and the use of digital technology.

The programme content is analysed for consistency with the best national and international practices in the field of education initiatives:

- National Research University Higher School of Economics (<https://www.hse.ru/en/ba/bi/>);
- National Research University "ITMO" (<https://en.itmo.ru>).

The Digital Health Care curriculum reflects the open access results of research of domestic and foreign experience in the field of medical organisation management, taking into account modern medical and digital trends: FSBI "National Medical Research Centre named after A.A. Almazov" of the Ministry of Health of Russia; (<https://goo.su/4Lbt>), "SOGAZ MEDICINA" group of clinics (<https://www.sogaz-clinic.ru/>), Mayo Clinic, USA (<https://www.mayoclinic.org/>), Cleveland Clinic, USA (<https://my.clevelandclinic.org/>).

The programme content is also reviewed for consistency with best national and international practices in educational initiatives: Digital Health Masters Programme, University of St Andrews, UK (<https://goo.su/4lb3>), Digital Health Masters Programme, University of Bristol, UK. (<https://goo.su/4LB4>).

Conclusions on Standard 2:

Strengths:

- A well-documented procedure for developing, approving and updating the study programme, including the expected learning outcomes in accordance with the strategic objectives of the university, taking into account the level of scientific and technological development of the country's economy, as well as taking into account the views of stakeholders;
- involvement of all stakeholders (management of the university, IIMET, Graduate School of Business and Management, teaching staff, representatives of professional communities in health care, digital marketing, business management, students) in the defining of the goals and strategies for the development of study programmes;
- compliance of study programmes with the best national and foreign practices in the field of organisational management, with due regard of current management, industry and digital trends; periodic revision of curricula and programmes taking into consideration the developments in science and digital technologies.

Areas for improvement:

- Insufficient formalisation of students and teaching staff participation in the development and updating of study programmes;
- Increasing the motivation of employers in becoming more involved in the procedures for development, improvement and revision of the study programme.

2.3 Standard 3. Student-centred learning, teaching and assessment

Consideration of needs of diverse groups of students and a possibility to create individual learning paths.

The possibility of creating an individual learning path for students is one of the priority areas of SPbPU's educational activities, which is reflected in the University's Educational Policy (<https://imet.spbstu.ru/en/documents/>) and its local regulations.

The flexible study system of SPbPU, built within the "2+2+2" model (2+2 Bachelor + 2 Master years), allows students to choose an individual learning path that provides an opportunity to gain knowledge in the areas important and interesting to the student. Students can choose their profile (specialisation) twice - after the second year of study (distribution according to the results of the third semester) and after the end of the Bachelor programme, which increases the awareness of their specialisation choice, motivation to study and leads to a better assimilation of professional knowledge. A description of the student-centred learning concept at SPbPU is available on the university's official website (<https://iotedu.spbstu.ru/> (in Russian)).

The structure of SPbPU's study programme includes the following blocks: unified Polytechnic Core (Core 1), Polygroup module, Consolidated Groups of Specialties and Majors module (Major 1), Major module (Major 2), Mobility module (Minor), university-wide electives.

The presence of a unified Polytechnic Core 1 in the structure of the basic study programme makes it easier for a student to change areas of study after the first or second year of a Bachelor's (Specialist) degree programme, so there is no need to retake the exams on the studied disciplines included in the Polytechnic Core.

Due to the introduction of a single standard for the scope and content of Physics and Mathematics subjects within the same Polygroup, students retain the possibility of changing their field of study (specialty) after the first or second year of the Bachelor's (Specialist) programme without having to retake the exams on the subjects within the same Polygroup.

The presence of a unified Consolidated Groups of Specialties and Major module and a Major module in the structure of the main study programme of Bachelor's degree allows the student to freely change the major within the consolidated group of majors after the first or second year of Bachelor's degree (specialist), without a "difference" in the curricula.

A mobility module (Minor) is an elective part of a Bachelor's (Specialist's) or Master's study programme, including electives from subject areas related to the main field of professional activity, which allow the acquisition of additional knowledge and competences, expanding the main study programme. The mobility module consists of two blocks: "Educational Foresight" (disciplines of SPbPU and/or other universities, including foreign ones, aimed at obtaining additional minispecialisation not related to the main programme and implemented in the format of online courses); "Career Adaptability" (possibility to choose several interrelated electives to obtain additional competences in another field of study, implemented in the format of traditional studies).

From 2021 onwards, the Mobility Module will have a self-development module aimed at developing a set of supraprofessional Soft Skills.

In the IIMET foreign language classes are organised on an individual basis and students are divided into groups according to their language level.

Systematic work is carried out with foreign students to help them master the Russian language, and additional classes are organised as part of elective courses. In order to improve the level of competence in Russian, some adapted study programmes have also been developed for the foreign students admitted in 2021.

In Master's programmes, the students' choice of research topics is decisive for the individualisation of learning.

People with previous vocational upper secondary or higher education have the option of choosing an accelerated programme of study based on an individual study plan.

Part-time and extramural students, in accordance with the curricula, retain the total workload of the study programme, as well as the number of contact hours, including the use of e-learning and distance learning technologies. All opportunities to choose an educational path shall be preserved for them.

Individual educational paths are implemented on the basis of the Regulations on the distribution of students by study profile, specialisation, master's programme (<https://imet.spbstu.ru/en/documents/>), Regulations on planning and organisation of elective modules (disciplines) (<https://imet.spbstu.ru/en/documents/>), Regulations on an individual study plan of students on basic study programmes, on the order of recertification and reattestation of disciplines (<https://imet.spbstu.ru/en/documents/>).

A friendly team of students and teachers at SPbPU allows international students to quickly adapt to their new living and learning environment. The university and the IIMET have foreign services whose responsibility is to support the education of foreign nationals and assist them in difficult situations if necessary. With restrictions on entry into the Russian Federation, foreign students are given every opportunity to study without compromising the quality of their education.

The needs of students with disabilities are taken into account in the implementation of SPbPU study programmes in accordance with the Regulations on the organisation of the educational process and conditions for the education of people with disabilities (<https://imet.spbstu.ru/en/documents/>).

Use of methods encouraging students to take an active part in creating the learning process

SPbPU students are actively involved in building, formalising and improving the educational process at university, institute, academic and research levels.

Representatives of the Student Committee for Educational Quality are part of the commission for choosing elective disciplines of the Self-Development Module aimed at the formation of supra-professional Soft Skills. In future selection procedures it is also planned to consider students' opinions on the outcomes of previously selected disciplines.

At the end of the "Best Teacher through the Students' Eyes" competition, which is scheduled to be launched in spring 2021, open master classes will be held by the winning teachers to disseminate the best teaching practices and promote the results of their own teaching activities.

As part of the internal independent evaluation of the quality of education conducted by the Educational Quality Centre at SPbPU, students take part in the following surveys every year:

- survey in the communication module of the voluntary performance appraisal procedure for teaching staff;
- "The quality of basic study programmes" survey on satisfaction with the quality of education.

The monitoring of students' opinions makes it possible to continuously improve the educational process. Reasoned comments and suggestions are discussed in the Graduate School. Feedback from students in order to analyse the effectiveness of using certain pedagogical methods and organisation of educational process is obtained through their communication with teachers, personal applications to the management of study programmes and university administration, interaction with structures of student self-government. The websites of the Graduate School of Business and Management, the IIMET and SPbPU provide an opportunity to ask questions and leave comments. Students actively use corporate emails, social media and messengers ((20+) [Peter the Great St.Petersburg Polytechnic University | Facebook](#) <https://www.instagram.com/polytech.eng/>, https://t.me/polytech_petra)) for feedback.

In addition to the surveys conducted by the Educational Quality Centre, at the end of November 2020 the IIMET Directorate conducted an anonymous survey among the students of the Institute on social media and on the Institute website, in which they could write their suggestions, comments, ideas, questions and feedback regarding the organization of the educational process at the IIMET. Responses of the IIMET Directorate on the results of the survey are posted on the official website of the Institute (https://imet.spbstu.ru/en/news/direkciya_ipmeit_vopros_otvet/).

In order to identify problem areas and answer questions about the organisation of the educational process, meetings with students are regularly held by IIMET Director V.E. Schepinin. The meeting on 7 November 2019, in particular, was attended by about 100 people (https://imet.spbstu.ru/en/news/vstrecha_direktora_ipmeit_so_studentami/).

Students' opinions on the organisation of the educational process are heard and discussed at meetings of the Graduate School of Business and Management, the Methodological Council of the IIMET, the Educational and Methodological Council of SPbPU and during working meetings, which result in taking decisions for the improvement and sustainable development of study programmes.

Use of clearly defined criteria and objective assessment procedures of learning outcomes/competences of students corresponding to

the expected learning outcomes, goals of the study programme and their purpose (diagnostic, formative or summative assessment)

The procedure for current monitoring of progress and formative assessments is regulated by the approved Regulations (<https://imet.spbstu.ru/en/documents/>).

The syllabi of all disciplines and traineeships include sections containing assessment criteria and assessment tools for formative and interim assessment of students. The evaluation criteria contain an indication of formative control and interim assessment types. In relation to the achieved results on the discipline or traineeship a "pass"/"fail" grade is awarded or a differentiated assessment on a four-point scale "excellent", "good", "satisfactory", "unsatisfactory" is made depending on the type of attestation according to the curriculum. Depending on the discipline, the criteria for formative monitoring of progress and interim assessment may include requirements for assignments and submission deadlines.

The level of learners' competence is assessed throughout their studies. Assessment takes place in a variety of forms, e.g., by students completing calculations or term papers, writing essays and reviews, completing assignments or tests, etc.

The funds of assessment tools for disciplines and traineeships are discussed and agreed at the meetings of Graduate Schools or departments responsible for the implementation of a discipline or practice, agreed by the head of the relevant study programme, and approved by the directors of SPbPU institutes. The funds of assessment tools contain assessment tools conjugated with the types of academic work and forms of control, educational and methodological support of the discipline, which usually includes methodological recommendations, practical tasks, calculation tasks and (or) banks of test tasks.

Syllabi and assessment tools for disciplines and practices are developed by the leading teachers using the automated information and management system "Repository of SPbPU study programmes" (<https://plan.spbstu.ru/>).

The assessment criteria for the discipline allow for a comprehensive evaluation of the quality of the discipline programme acquisition by students, and are consistent with teaching methods and guarantee objectivity.

The state final examination of students is carried out in accordance with the approved Regulations on the procedure of the state final examination of higher study programmes – Bachelor's, Specialist's and Master's programmes (<https://imet.spbstu.ru/en/documents/>).

The assessment system used to evaluate the results of the disciplines, practices and the study programme as a whole corresponds to the aims and objectives of the study programme, which is confirmed by the results of the formative and final state attestation.

At least twice an academic year the administration and teaching staff analyze the results of formative and final attestation in order to improve the organization of the educational process. The interest of all parties of the educational process, including senior management of the university, is expressed in the consideration of the issues of formative attestation and state final examination at the Educational and Methodological Council (<https://clck.ru/ThNve> (in Russian)) and the Academic Council of the University.

Information about the study programme, criteria and procedures for assessment of learning outcomes/competencies, about examinations, tests and other types of control.

Information on study programmes is publicly available on the official website of the university in the section "Information about the educational organization" (<https://www.spbstu.ru/sveden/education/> (in Russian), <https://english.spbstu.ru/education/programs/degree-programs/>), on the IIMET website (<https://imet.spbstu.ru/en/programs/>), on the visual media installed on campus, in the electronic information and educational environment of SPbPU, in the personal profile of the learner (<https://lk.spbstu.ru/>).

Students can learn about the curriculum, syllabi of disciplines (modules), traineeships and state final examination programmes as well as the results of formative attestation in the student's personal profile (<https://lk.spbstu.ru/>).

The information on the activities, forms and rules of formative progress control and interim attestation in the discipline is brought to the attention of students by the teacher in the first class. This information is also available in e-courses in the electronic information and education environment of SPbPU, including in the personal profile of SPbPU student (<https://lk.spbstu.ru/>).

Timetables for classes, consultations, interim assessments and state final examinations are made available to all participants in the educational process on the University's official website (<https://ruz.spbstu.ru/>) as well as in the student's personal profile.

In general, students are informed online through corporate e-mail, posting information on the SPbPU website (<https://www.spbstu.ru/>, <https://english.spbstu.ru/>), the IIMET website (<https://IMET.spbstu.ru/>, <https://imet.spbstu.ru/en/>), the Graduate School website (<https://business.spbstu.ru/> (in Russian)), in the personal profile of the learner (<https://lk.spbstu.ru/>), directly in e-courses on the platforms of electronic information and education environment (<https://dl-imet.spbstu.ru/login/index.php>).

The heads of study programmes are constantly interacting with students about the organisation of the educational process, formative monitoring of progress and interim attestation. In addition, every student can ask any question on the organisation of the educational process by contacting his/her representative at the Student Commission for Educational Quality or at the Educational Quality Centre.

Use of procedures of independent assessment of learning outcomes.

The main mechanism for independent assessment of students' learning outcomes is organizing students' participation in regional, Russian and international Olympiads, competitions, scientific conferences, where the judges are external independent experts: representatives of Russian and foreign businesses, public organisations, public authorities, scientists and academicians.

Students studying in the accredited cluster participate annually in the Olympiad "I am a Professional" in the categories "Business Informatics", "Programming and Information Technology", "Economics", etc. The high level of

students' training in the study programmes of the accredited cluster is confirmed by victories and prizes in these events (Annex D).

Availability and effectiveness of appeals procedure and procedures for dealing with students' complaints

Students can express their opinions on the organization of the educational process in different forms: by directly contacting the head of the study programme or the directorate of the IIMET study programmes (depending on the issue arisen), by participating in surveys on the quality of education in the electronic information and educational environment of SPbPU, as well as by sending feedback forms on websites of SPbPU and educational structural divisions. Each appeal is followed up and a detailed response is provided.

Students may also complain to the Educational Quality Centre and to the representative of the IIMET on the Student Committee for Educational Quality.

The appeals on the procedures and assessment of the mastered disciplines are considered in detail in the Regulations on the formative control of progress and interim attestation of students on higher study programmes (<https://imet.spbstu.ru/en/documents/>). The procedure of appeals on the results of state examination tests is established by the Regulations on the state final examination of higher study programmes - Bachelor's, Specialist's and Master's programmes (<https://imet.spbstu.ru/en/documents/>).

The regulated, transparent and open procedures for assessing the mastered discipline and the study programme, appeals and assessments of interim and/or final state attestation prevents conflicting situations between teachers and students.

In order to resolve problematic situations regarding ethical issues and violation of internal regulations, the University has an Ethics Commission established under the Academic Council. Also, the Commission for the settlement of disputes between participants of educational relations is established at the university in order to resolve disagreements between the participants of educational relations on the implementation of the right to education, including the cases of conflict of interest of the teaching staff, the application of local regulations, appealing against decisions on disciplinary penalties to students.

Regular meetings with learners in online and offline formats, where they can openly ask and discuss questions of concern, help to build trust and mutual respect between the learner, the teacher and the administration. The range of events is wide and can be found in the news section of the IIMET website (<https://IMET.spbstu.ru/news/>, <https://imet.spbstu.ru/en/news/>).

Conclusions on Standard 3:

Strengths:

- The procedures for assessing the competences of students in SPbPU have been developed and documented;
- The criteria, requirements and procedures for assessing the mastery of study programmes are indicated in the SPbPU local acts and educational

documentation and available to students, teachers and all interested parties;

- The system of assessing the competences of students in the formative progress control, interim and final state attestation corresponds to the planned learning outcomes, while the assessment criteria are aligned with the teaching methods and the expectations of employers;
- The accredited study programmes envisage a mechanism for interaction between students and the heads of study programmes as well as the administration of the training departments, which increases the efficiency of the educational process.

Areas for improvement.

- The existing system of student assessment does not allow for a proper comparison of learning outcomes with the European system of student assessment;
- More active participation of students in various external independent quality assessment procedures is required.

2.4 Standard 4. Student admission, support of academic achievements and graduation

Systematic career guidance work targeted at the recruiting and selection of applicants should be in place

Career guidance at SPbPU is viewed as part of the continuous implementation of Bachelor's, Specialist's and Master's degree programmes. Career guidance activities are based on the systematic training of highly qualified specialists: pre-university education - higher education - effective employment.

The university is responsible for:

- conducting marketing activities for applicants (information, dedicated and motivational activities, integration of offline and online marketing plans);
- identifying gifted and interested applicants to work with them personally;
- increasing applicants' loyalty by "involving" them in the life of the university: receiving information on SPbPU news, student life, participation in events, competitions, Olympiads, etc;
- speaking to the media by SPbPU academicians;
- inter-university activities aimed at attracting foreign students, including the signing of cooperation agreements with foreign universities in various fields of activity, student exchanges, etc.

Career guidance work aimed at preparing and selecting applicants for the accredited cluster of study programmes is carried out through interaction with educational organisations, including secondary vocational education (on-site and remote consultations, thematic competitions and round tables), and personal communication of study programme managers, teachers, applicants and their representatives at open door days (<https://IMET.spbstu.ru/events/> (in Russian)).

The organisation of career guidance is based on the application of person-centred technologies and a systematic and activity-based approach

(business games, business workshops, project methods, group forms of work, portfolio) that allow potential applicants to form certain competencies so that they are aware of the modern market requirements and choose consciously their future field of professional activity.

As part of continuous career guidance work in the Business Informatics cluster, regular meetings are organized with potential applicants - senior high school students and graduate college students. The Head of the Business Informatics has been appointed the Chairman of the State Examination Commission for the specialty 09.02.05 "Applied Informatics (by industry)" at the St. Petersburg State Budgetary Professional Educational Institution College of Information Technologies for 2021.

Winter Master's schools were organized for graduating students of the Bachelor's degree programme in order to familiarize them with the content of the Master's degree study programmes and to engage them in solving cases developed in cooperation with employers on topics corresponding to the major of the programme (<https://goo.su/4LBc> (in Russian)).

All information about the ongoing programmes, admission rules, conditions of study in the programmes is presented in information booklets, in videos, on information stands.

Availability and effectiveness of rules and regulations for admission, transfer of students from other educational institutions, recognition of qualifications, periods of study and prior learning.

Admission of applicants for Bachelor's and Master's degree programmes is carried out on a competitive basis. All procedures are regulated by the annually established Rules of admission to study in Bachelor's degree programmes, Specialist's degree programmes, Master's degree programmes at the Federal State Autonomous Educational Institution of Higher Education Peter the Great St. Petersburg Polytechnic University. The document is posted on the university website and information stands of the Admissions Committee. The site also contains materials on the deadlines for documents submission, admission statistics of past years, on the granting of special rights for admission, entrance test programmes, information on the provision of a hostel (<https://www.spbstu.ru/sveden/Abitur/>, <https://english.spbstu.ru/education/admissions/>).

The effectiveness of the admission procedure for Bachelor's degree programmes is determined, among other things, with the consideration of the applicant's individual achievements, which is carried out through the accrual of points for individual achievements. These points are awarded to the applicant who has submitted documents confirming the results of individual achievements, and are included in the number of competitive points.

The effectiveness of the admission procedure for Master's degree programmes is determined by conducting an interdisciplinary exam, which includes not only testing, but also presenting a portfolio with information about individual achievements. This approach allows us to provide priority opportunities for admission to applicants who are most interested in getting education, who have practical experience and are motivated to get a Master's degree.

In the Russian Federation, the recognition of education and (or) qualifications obtained abroad is carried out on the basis of the Federal law "On

education in the Russian Federation" dated December 29, 2012 (No. 273-FZ), according to which the recognition of foreign education is carried out in accordance with international treaties of the Russian Federation regulating the issues of recognition and establishment of equivalence of foreign education, and the legislation of the Russian Federation. Holders of a foreign education recognized in the Russian Federation are granted the same academic rights as holders of a corresponding education received in the Russian Federation.

The procedure for transferring and reinstating students to SPbPU is regulated by the Regulations on students' enrolment (procedure and grounds for transfer, expulsion, reinstatement, rules for granting an academic leave) (<https://imet.spbstu.ru/en/documents/>).

Previous periods of study and credits acquired by students in other educational institutions are taken into account in accordance with the Regulations on training students according to the individual curriculum in basic study programmes, on the procedure for credit transfer and re-assessment of disciplines (<https://imet.spbstu.ru/en/documents/>).

In order to implement the transfer and reinstatement procedure effectively, IIMET has developed and approved the Regulations for the reinstatement (transfer) of students in study programmes of higher education - Bachelor's degree programmes, Specialist's degree programmes, Master's degree programmes at the Institute of Industrial Management, Economics and Trade. This regulation establishes clear transparent rules for these procedures, describes in detail the algorithm of actions and contains all the necessary forms of documents. The regulations and document forms are posted on the IIMET website (<https://imet.spbstu.ru/en/documents/>).

Availability of systematic work to support students' progression.

A specific feature of SPbPU study programmes is their focus on project activity (<https://clck.ru/ThSYL> (in Russian)). Project activity is focused on the use of knowledge, skills and abilities acquired during training in order to formulate and solve practical problems, which can be both academically-oriented (academic research) and practice-oriented. Project activity is an obligatory element of Bachelor's, Specialist's or Master's degree programmes. Students of different courses and different study programmes can participate in the project, depending on the requirements for the project participants. The total volume of the study programme allocated for project activity is at least 40 credits, the implementation period is during the entire study programme. In this case, project activity for second-year Bachelor's and Specialist's degree students is organized within the framework of the Core Polytech discipline (Core 1) "Fundamentals of Project Activities", for senior Bachelor's and Specialist's degree students, as well as Master's degree students - within the framework of various disciplines in the format of course papers and coursework projects as a separate interdisciplinary project in the curriculum, as well as in the format of traineeship. All students have an opportunity to participate in projects commissioned by industrial partners.

When mastering study programmes, active pedagogical technologies are widely used to involve students in solving professional problems. Students not only attend lectures and work in practice or laboratory sessions,

but also take part in open lectures, master classes, scientific conferences held by representatives of science, the business community, government authorities and public organizations at the university or on external sites. Such teaching methods as case studies, business games, contextual and problem-based learning, as well as the use of digital technologies allow not only to engage students, but also to prepare them for the real conditions of professional activity.

The Career Development department of SPbPU holds a wide range of practical events for free communication between students and employers: vacancy fairs, career forums, company presentations (master classes), round tables with representatives of the labor market, university championships in various areas of study, lectures, excursions to enterprises in St. Petersburg and Leningrad region, and a number of other events.

The information about students' achievements is collected in their portfolios in their personal accounts, which are subsequently monitored and verified by the staff of the Graduate School.

Financial incentive of students' academic achievements is carried out in accordance with the Regulations on scholarships and other forms of material support for students of the Federal State Autonomous Educational Institution of Higher Education Peter the Great St. Petersburg Polytechnic University (<https://imet.spbstu.ru/en/documents/>).

For excellence in mastering study programmes and a significant contribution to the development of scientific, technical and innovative activities of the university, students are awarded with badges "Excellence in Study" and "Excellence in Science", certificates of honor and commendations (<https://clck.ru/ThScA> (in Russian)).

Recognition of higher education qualifications obtained in the RF and abroad (Diploma Supplement).

Since September 2013, SPbPU as a national research university, has acquired the right to independently recognize, in accordance with the established procedure, foreign education and (or) foreign qualifications in order to organize admission to study at SPbPU, as well as foreign education and (or) foreign qualifications, foreign academic degrees, foreign academic titles in order to organize access of their holders to professional activities at SPbPU.

To implement this function, the Centre for the Expertise of Foreign Education Documents (CEFED) was created, which is a structural subdivision of the International Education Department of SPbPU. The main goal of CEFED is expert review of foreign documents on education and (or) qualifications, academic degrees and titles for academic and professional purposes; preparation of the Common European Diploma Supplement and transcript in English.

Applicants entering IIMET and holding foreign education documents must submit a report of the CEFED on the possibility of admission.

CEFED also prepares transcripts for those who want to continue their studies abroad, but have not yet completed their studies at SPbPU.

University graduates have the opportunity to receive the European Diploma Supplement of the SPbPU standard upon application (<http://www.edudoc.spbstu.ru/english/diploma-supplement>).

Participation of students in mobility programmes.

The purpose of the international academic mobility programmes development in IIMET is to improve the quality of education and to train graduates competent in intercultural communication and competitive in the international labor market. Academic mobility is organized in association with the Department of International Study programmes and Academic Mobility of SPbPU, which is a structural subdivision of the International Education Office.

IIMET deals with the following key tasks in terms of students' participation in mobility programmes: informing about academic mobility programmes and forming a pool of programmes in each field of study for an individual approach to choosing a programme, considering the specifics of the study programmes implementation in various fields of study; competitive selection for participation in international academic mobility programmes.

Full-time students of Bachelor's, Specialist's and Master's degree programmes, regardless of their citizenship, study programme and the language in which it is realized, participate in academic mobility programmes on a competitive basis. The recommended duration of the academic mobility programme is one semester for a Bachelor's degree course, one semester for a Master's degree course.

IIMET has formed the Competition Commission for academic mobility, a collegial body with the aim to objectively assess competitive applications and subsequently determine the winners of the academic mobility competition. The main selection criteria are academic performance, fluency in the host language (or English), and a preliminary list of disciplines (academic mobility plan).

One of the most important aspects of the academic mobility concept in IIMET is the correspondence of the major (programme) at the partner university to the major (programme) at IIMET. Most of the disciplines chosen for study at a partner university should correspond as much as possible to the disciplines of the curriculum in terms of the number of ECTS units (credits) and content, so that they can be recognized upon return.

In 2016-2020 76 students of the Business Informatics cluster completed students' internships in foreign universities within the academic mobility framework (Table 8). Detailed information on the students' academic mobility in the cluster is presented in Annex E.

Table 8 – Academic mobility of Business Informatics students

Year	2016	2017	2018	2019	2020
The number of students who participated in academic mobility	29	7	20	4	16

40 foreign students from China, Algeria, Bangladesh, Colombia, Kazakhstan, Uzbekistan, Turkmenistan, etc. are enrolled in Bachelor's degree programmes in the Business Informatics cluster.

11 foreign students from the USA, China, Thailand, and Ecuador are enrolled in Master's degree programmes.

Conclusions on standard 4:

Strengths:

- efficiency and transparency of procedures for admission, reinstatement and transfer of students;
- availability of in-house Centre for the expertise of foreign education documents;
- SPbPU has the right to independently recognize foreign education, qualifications, academic degrees, and titles in order to organize foreign students' admission to study and to involve foreign professors in basic study programmes at SPbPU;
- high international academic mobility level of Business Informatics students.

Areas for improvement:

- improving the system of encouraging students' scientific achievements;
- insufficient number of scientific and pedagogical staff and students with fluency in foreign languages for participating in international academic mobility programmes and implementing international cooperation projects.

2.5 Standard 5. Teaching staff

Qualification and competence of teaching staff (academic degrees and titles, industry and state awards and prizes, published text books and methodological guidebooks).

The educational process in the Business Informatics cluster is provided by the teaching staff in the amount sufficient for high-quality training of graduates. The faculty of the Graduate School of Business and Management, involved in the implementation of the Business Informatics disciplines, includes 4 Doctors of Sciences, 22 Candidates of Sciences, 10 senior teachers, 9 assistants (Annex F), as well as teaching staff from other institutes and graduate schools of SPbPU, practitioners from the professional IT community. Graduate School of Business and Management assistants are trained in postgraduate training programme.

Bachelor's degree programmes have more than 75% of teaching staff with an academic degree and (or) academic title. Bachelor's degree programmes Enterprise Architecture and Electronic Business have highly qualified specialists, including 2 Doctors of Sciences, 13 Candidates of Sciences.

Master's degree programmes Business Engineering, Digital Health Care, Digital Marketing and Electronic Business Highly have qualified specialists, including 3 Doctors of Sciences, more than 9 Candidates of Sciences. More than 80% of teaching staff have an academic degree and (or) an academic title.

The competence of the Graduate School of Business and Management teaching staff is confirmed by career development and professional advancement certificates (Annex G).

The teaching staff involved in the implementation of the disciplines of the accredited cluster have passed international certifications in such key areas of activity as Project Management, Enterprise Architecture, IT Service Management, as well as Russian certifications in areas such as Business

Process Management, SAP TERP 10, etc. (Annex G). These teachers form the concept of core disciplines and determine the key direction of programme development in the Business Informatics cluster.

The teachers are given the opportunity for career growth and professional development. Most of the Graduate School of Business and Management teachers are involved in research and project activities, which resulted in, among other things, defending dissertations for academic degrees, for example, in December 2020: Dubgorn Alisa Sergeevna (<https://goo.su/4ksC> (in Russian)), Levina Anastasia Ivanovna (<https://goo.su/4kSc> (in Russian))).

The results of teachers' scientific and pedagogical activity are presented in handbooks and methodological guidebooks, as well as in online courses (Annex F). In 2016-2020, teachers of the Graduate School of Business and Management published 20 textbooks, 30 handbooks and 14 monographs, designed 6 online courses corresponding to the focus of the cluster's programmes. Monographs and handbooks are widely used in the educational process for students' self-study, coursework, internships, for research work and graduation theses.

Relevance of teachers' qualifications, degrees and titles and /or practical experience to the profile of the study programme.

In all study programmes of the Business Informatics cluster, disciplines are taught by teachers with the appropriate qualification level (profile specialism, academic degree, title), as well as by practitioners from among top managers and leading specialists of organizations and institutions of the IT and management sectors in St. Petersburg. The share of practicing teachers is 36% of the total number of teachers.

Bachelor's degree programmes have more than 70% of teachers with an education corresponding to the profile of the discipline taught. Experts from leading IT consulting and industry companies (SAP CIS LLC, EPAM SYSTEMS LLC, Epayments Technologies LLC) are actively involved in teaching (Annex F).

Master's degree programmes of the Business Informatics cluster have more than 80% of teachers with an education corresponding to the profile of the discipline taught. IT specialists (Dialogue-IT LLC, SAP CIS LLC), as well as visiting lecturers from foreign universities (Annex F) are involved in the implementation of the disciplines of the international study programme Business Engineering. Specialists of the Federal State Budgetary Institution "National Medical Research Centre named after V.A. Almazov" of the Ministry of Health of Russia, SAP CIS LLC are involved in teaching the disciplines of the Digital Health Care programme. In training under the Digital Marketing and Electronic Business programme, the emphasis is placed on practicing teachers who are familiar with constantly updated modern methods and tools of digital marketing (Respond LLC, Project Management LLC, NIKI LLC, online school Smart Copywriting).

Involving teachers from various departments and institutes of SPbPU, other foreign and Russian universities, as well as employers, allows us to cover all areas and disciplines provided for by accredited study programmes and easily adapt to new changing requirements.

Research activity of the teaching staff, implementation of research results in the academic process.

A full cycle of knowledge creation and development is implemented on the basis of the Graduate School of Business and Management: the study of current theories and best practices, testing knowledge in real projects, generalization of knowledge and development of theory, integration of new theoretical and practical knowledge into curricula.

Most of the teachers of the study programme are involved in research, project and publication activity. Within the framework of grants financed by the Russian Science Foundation and the Russian Foundation for Basic Research, since 2019, the Graduate School of Business and Management teachers have been developing a theoretical and methodological basis for designing, modeling and improving the integrated architecture of enterprises, business processes systems, architectural solutions, reference business and digital architectures for specific industries (RSF Grant "Digital Transformation of Russian Business: Development of Theory and Methodology", 2019-2021; RFBR grant "Increasing the Economic Efficiency of Management of Medical Organizations in the Context of Digital Transformation", 2019-2021; RFBR grant "Methodology for the implementation of end-to-end digital technologies in the system of geographically distributed medical organizations", 2020-2022). Research results within the framework of grants are published in peer-reviewed Russian and international journals, presented at all-Russian and international research and practical conferences, published in the form of monographs, and are also integrated in the educational process.

The teachers of the Graduate School of Business and Management regularly publish the results of their research: over the past 5 years, 705 publications have been published, of which 199 are in the journals of the Higher Attestation Commission; 13 monographs; 20 textbooks, 30 handbooks, electronic educational-methodical complexes, methodological guides and recommendations (Table 9). There are also publications in foreign editions (Annex F).

Table 9 – Publication activity of the Business Informatics cluster teachers

Year	Higher Attestation Commission	SCOPUS, WoS	RSCI	Monographs	Textbooks, handbooks
2016	32	26	40	2	8
2017	38	36	44	2	11
2018	35	48	50	3	12
2019	50	54	56	4	9
2020	44	48	40	2	10
Total	199	212	230	13	50

From 2012 to the present, the teachers have been involved in the implementation of projects with enterprises in the IT, health care, engineering, resource supplying organizations, oil and gas, mining and other industries. Project activity provides an understanding of the current needs of modern enterprises in terms of management and IT support. The results of

the teachers' project activity in the form of educational cases are included in the curricula of disciplines.

Use of innovative teaching methods and advanced technologies.

In the Business Informatics cluster, innovative approaches to teaching students are actively used: case-study (analysis of specific situations, situational analysis), business games, brainstorming, trainings, master classes, teaching disciplines in the form of courses based on research findings tailored to the needs of employers. Innovative approaches to teaching develop students' skills in teamwork, interpersonal communication, decision-making, and leadership skills. The administration of the department regularly organizes round tables and open lectures of business representatives. Students get acquainted with innovative digital solutions and the experience of implementing these solutions for the manufacturing sector and business.

SPbPU has a mechanism for the development and support of online courses (<https://open.spbstu.ru/> (in Russian)). The teaching staff are actively involved in developing online courses on the portals coursera.org, openedu.ru. In the period from 2016 to 2020, teachers of the Graduate School of Business and Management have developed 5 online courses (Annex F).

Visiting lecturers from other educational institutions including those from abroad.

Visiting lecturers from other educational institutions, including lecturers of foreign universities from various countries (Netherlands, Finland, Germany) are involved in teaching Master's degree courses (Annex F).

Lecturers from Russian scientific organizations engaged in educational activities (St. Petersburg Federal Research Centre of the Russian Academy of Sciences (SPIIRAS), Joint Stock Company Scientific Research Institute of Precision Mechanics) are involved in teaching the courses of Master's degree programmes Digital Health Care and Digital Marketing and Electronic Business.

Table 10 – Involving foreign lecturers in the educational process for the Business Informatics programmes

Year	2016	2017	2018	2019	2020
The number of foreign lecturers involved in the educational process	1	1	2	4	4

When hiring foreign teachers, criteria such as teaching experience in the world leading universities, participation in international research projects, citation index, uniqueness of the educational technologies used and the subjects taught, etc. are considered.

Participation of the teachers in joint international projects, internships abroad, academic mobility programmes.

The mobility of the Graduate School teachers is provided through trips to foreign partner universities and scientific organizations (Annex H) for internships, for participating in scientific conferences. In 2016-2020, the Graduate School teachers took part in international conferences, seminars, internships within the framework of the international project ERASMUS + No. 561577-EPP-1-2015-1_FI-EPPKA2-CBHE-JP (2015-2940 / 001-001)

Joint Programmes and Framework for Doctoral Education in Software Engineering. Academic project manager - Director of the Graduate School of Management and Business Professor Ilyin I.V. The project was attended by representatives of universities from Finland, Great Britain, Denmark, Germany, United Arab Emirates, Russia.

The number of foreign internships and conferences of the Business Informatics teaching staff in dynamics for the period from 2016 to 2020 is presented in Table 11. Detailed information is presented in Annex I.

Table 11 – Academic mobility of the Business Informatics teaching staff

Year	2016	2017	2018	2019	2020
The number of foreign internships and conferences of the teaching staff involved in the educational process	12	6	8	1	0

A system of financial and non-financial incentives for teachers.

SPbPU has created a system of financial and non-financial incentives for teachers, based on a set of local regulations:

- Regulations on remuneration of employees of FSAEI HE SPbPU (<https://imet.spbstu.ru/en/documents/>);
- Regulations on the rating of teaching staff and research staff of FSAEI HE SPbPU (<https://imet.spbstu.ru/en/documents/>);
- Regulations on incentivizing and rewarding employees of FSAEI HE SPbPU (<https://imet.spbstu.ru/en/documents/>).

The official salary is established for a teacher based on the results of assessing the quality of their work in accordance with the rating category (rating) assigned for one academic year on the basis of the Regulations on the rating of teaching staff and research staff of FSAEI HE SPbPU.

In accordance with the labor legislation of the Russian Federation, SPbPU applies the following incentive payments:

- payments for intensity and high performance;
- payments for the quality of work performed;
- bonus payments based on the results of work.

Non-financial (non-material) performance incentives at SPbPU include local incentives, regional awards and incentives, departmental awards, incentives of the President of the Russian Federation, awards and incentives of the Government of the Russian Federation, state awards of the Russian Federation.

The collective agreement and local acts of the university also provide for payment for training employees in other educational organizations, gifts for the children of employees, corporate events of various levels, discounted tickets to theaters and excursions, trips to recreation centers, a free day once a month for economic purposes of employees as measures of non-material incentives.

The IIMET annually hosts the Sports Festival, the purpose of which is to unite the team of the Institute's employees and students.

The employees of SPbPU are awarded with commendations, the Certificate of Honor of SPbPU, the honorary title "Honorary Worker of SPbPU" for the timely and conscientious performance of their duties, long-term and impeccable work in SPbPU.

Availability and use of clear, transparent and objective criteria for: hiring staff including teachers from foreign educational institutions, assignment to positions, promotion, dismissal; dismissal of teachers with low level of professional competency.

Teaching staff at SPbPU are hired on the basis of competitive procedures. The procedure and conditions for holding a competition for filling positions of teaching staff are determined by the Regulations on the procedure for organizing and holding a competition for filling positions of teaching staff of FSAEI HE SPbPU (<https://imet.spbstu.ru/en/documents/>). The Competitive Selection Commission for teaching staff headed by the Vice-Rector for Educational Activities carries out competitive selection to the positions of teaching staff at SPbPU.

Persons who meet the qualification requirements established by the Qualification Directory of Managers, Specialists and Employees, approved by the order of the Ministry of Health and Social Development of Russia dated January 11, 2011 No. 1n (section "Qualification characteristics of managers and specialists of higher professional and continuing professional education"), and the requirements established for the teaching staff at the university, are allowed to participate in the competition for filling positions of teaching staff.

The minimum requirements are set for the indicators of educational, methodological and scientific activities of applicants for filling positions of teaching staff of FSAEI HE SPbPU (<https://imet.spbstu.ru/en/documents/>).

Depending on the position for which the competition is announced (assistant, senior lecturer, associate professor, professor), the minimum values of the established indicators for applicants' educational and methodological activities (the number of textbooks and handbooks, including massive open online courses) and scientific activities (the number publications indexed in Scopus and (or) WoS and their citation; Hirsch indices for Scopus and RSCI, etc.) are different.

The procedure for competitive selection and the minimum requirements for positions for competitive selection can be found on the special website of SPbPU (<https://job.spbstu.ru/> (in Russian)).

For the competitive selection of foreign teaching staff, SPbPU has a special Selection Commission for foreign research and teaching staff, headed by the Vice-Rector for International Affairs. For foreign teachers, there are also clear, transparent and objective criteria established for hiring at SPbPU.

The issues of transfer, dismissal and suspension of teachers with a low level of professional competence are regulated by the legislation of the Russian Federation and local regulations of SPbPU.

In SPbPU, the internal independent assessment of teachers' professional competencies is of special importance.

The assessment is carried out on a voluntary basis in order to confirm that teaching staff have the competencies necessary for the implementation of educational activities in accordance with the goals and priorities of the university strategic development. The assessment is designed to promote the rational use of teachers' educational and creative potential, to improve their

professional level, quality and efficiency of work, develop initiative and business activity. The voluntary assessment procedure is regulated by the corresponding Regulations (<https://imet.spbstu.ru/en/documents/>).

The system for career development and professional advancement for teachers.

In accordance with the requirements of the legislation of the Russian Federation, pedagogical workers have the right to study in continuing professional programmes at least once every three years. The university promotes more frequent professional advancement for the teaching staff and professional retraining in accordance with current trends in the economy and education. The SPbPU Institute of Continuing Education provides SPbPU teachers with opportunities to improve their professional competencies through the implementation of state departmental and industry-specific continuing professional programmes (https://ido.spbstu.ru/obuchenie_sotrudnikov/ (in Russian)).

Each teacher can choose a programme that suits his professional interests. The titles and content of the programmes are constantly reviewed in accordance with existing trends and the most modern achievements in subject areas. At the end of the courses of continuing professional education, trainees undergo final assessment.

Teachers of the Graduate School of Business and Management are constantly improving their qualifications, which is confirmed by certificates of professional advancement (Annex G), including:

- diplomas of retraining – 14;
- international certifications – 13;
- certificates of professional advancement (2017–2021) – 104.

Conclusions on standard 5:

Strengths:

- a high level of teachers' qualifications, confirmed by academic degrees and titles, certificates and practical experience in the profile of the cluster's study programmes;
- a high level of teachers' activity in implementing the results of scientific research and project activity in the educational process, using innovative methods and advanced technologies in the teaching process, ensuring high quality of teaching;
- availability of a system of internal independent assessment of teachers' professional competencies, carried out on a voluntary basis;
- involving foreign lecturers in the educational process;
- a system of financial incentives for research and teaching staff, formed on the basis of a rating score that correlates with key performance indicators of the university.

Areas for improvement:

- expansion of opportunities for teachers' participation in joint international projects, foreign internships, academic mobility programmes is required;
- development of activities to involve teachers from other Russian educational institutions is required.

2.6 Standard 6. Learning resources and student support

Provision of the study programme with material and technical resources in accordance with the requirements of the curriculum (modern tools, equipment, computers, classrooms, laboratories).

Material and technical resources of the "Business Informatics" study programmes are adequate and sufficient for the Institute to implement the curriculum, including all types of general and interdisciplinary training, practice-oriented and scientific work, in accordance with the current sanitary and fire regulations and standards. Classrooms are equipped with the Internet-enabled computers, connected to the local information network.

Academic training for the cluster of programmes under accreditation is carried out on the basis of the SPbPU campus which enables the university to provide students with the technical facilities required by the curriculum and the Federal and University Education Standards.

Graduate School of Business and Management possesses the necessary licensed software, determined by the curriculum and updated every year.

Classrooms and laboratories are equipped with multimedia facilities for presentations, sound reproduction systems, and screens.

Graduate school of Business and Management uses the range of sufficiently equipped laboratories to ensure successful implementation of programmes that make part of the "Business Informatics " cluster, including:

- "Digital Technologies in Business and Education" research laboratory manages scientific projects funded from grants by the Russian Humanities Research Foundation and the Russian Foundation for Basic Research, etc.;
- "Modern Management Technologies" laboratory provides access to the information and technical facilities and programmes, and contributes to the implementation of information technologies in scientific and innovative academic process.

Funding of study programmes enables annual update of the material and technical resources of the Institute, thereby enhancing the quality of education.

Availability of up-to-date library and information resources including those for independent learning and research.

SPbPU has a range of developed electronic information and education facilities, which include the library and other information resources.

The SPbPU Library Complex provides access to all types of information, educates users on how to work with scientific and academic resources, and contributes to the preservation, development and enhancement of the intellectual and cultural potential of the university (https://english.spbstu.ru/structure/informatsionno_bibliotechnyy_kompleks/). The Library Complex is represented by a number of divisions, including the Fundamental Library, the Institute of Corporate Library systems, the Digital Reprography Centre and the National Centre for Scientific Data Identification. The Library funds amount to around 4 mln printed copies and provide access to a vast electronic catalogue. The Complex actively uses electronic databases to meet the changing requirements of the academic process and scientific research. The Library also provides services for promotion of research results in the global digital space.

Students can have free access to e-resources of well-known foreign and national publishers, databases and corporate library systems, including Elsevier eBooks Collections and Web of Science.

The stock is regularly updated and all acquisitions to the Library's collection appear in the "Bulletin of Accessions to the Library" (<https://goo.su/4L4m> (in Russian)).

Students and the faculty may enjoy free Internet access at the SPbPU campus and dormitories.

The cluster of programmes under accreditation provides students with the total number of 192 computers with the Internet access, 6 e-Library systems, 47 internal academic and information resources, 205 external academic and information e-resources, and 114 databases of the electronic catalogue.

Availability of infrastructure to ensure access to quality education to students with different opportunities and of different age, and to provide the development of social and educational component of the academic process.

SPbPU prioritizes the need to create conditions for the barrier-free, safe and convenient movement of persons with disabilities, and to ensure their access to the buildings and facilities of the University. The measures taken include improvements in providing accessibility, information and navigation support facilities, equipping stairs and ramps with handrails, using contrasting colors in doors and stairs, and zoning in parking spaces. SPbPU has information systems and telecommunication networks specially adapted for physically challenged people. Information on accessibility is available on the official website of the University in the "About Us" section (<https://www.spbstu.ru/sveden/ovz/> (in Russian)).

SPbPU established the Centre for Psychological Counseling in order to provide students and faculty with psychological support in difficult situations. The Legal Clinic is another University body that aims to promote enforcement of the citizens' rights, freedoms and duties stipulated by law, protect their legitimate interests, provide free legal assistance to all applicants, primarily the SPbPU students, and promote legal awareness.

SPbPU actively encourages and develops various student associations, such as (<https://english.spbstu.ru/education/students-life/students-communities/>): Student Union, Military and History Club "Our Polytech", Student Club, Energy club, Public Institute "Adapters", Student Council, Sports Club "Polytechnic", Culture and Education Centre "Harmony", Design and Technology Bureau, Student Culinary Organization YESLAB, Economics Club, Fablab, Student Scientific Society, Student Engineering Society (SIO), Sports and Technical Creativity Club "Extreme".

The "Harmony" Centre, for example, implements and supports various social, cultural and creative projects and events (https://www.spbstu.ru/students/student-association/kpc_spbstu/ (in Russian)). Every participant of this club may enjoy the opportunity to develop and achieve one's full potential in a team of like-minded people under the supervision of experienced advisors. The "Harmony" Centre holds a large number of academic events, including the "Youth Friendship Festival" – a

large-scale meeting where students share their own vision on modern cultures, and other seminars, such as the "Dialogue of Generations", the "Modern Older and Younger Generation", and the "Heroes of our Time".

SPbPU launched a Museum Complex to complete the following objectives (https://english.spbstu.ru/structure/museum_complex/):

- provide the Russian public and the world community with an access to the unique heritage of the SPbPU education system;
- exhibit museum items and collections;
- promote patriotic self-awareness and educate the Russian youth by inspiring them with the examples of great teachers and mentors from the Polytechnic University;
- conduct scientific and methodological work, cultural and academic events, excursions and publishing activities;
- attract attention of students to technical professions and consult them on choosing future career.

The White (Assembly) Hall is a unique cultural and educational Centre of Saint-Petersburg located in the Main Building of SPbPU (<https://white-hall.spbstu.ru/> (in Russian)). Construction of the White Hall was launched in 1899 and completed in 1901 on the project of Ernest Virrich. The Hall's design demonstrates dignity, solemnity, perfection of architectural forms and unique acoustics which made it one of the best university halls in Saint-Petersburg of the XXth century. The White Hall regularly hosts such ambitious University projects as "Creative Semesters in Polytech", "Discussions on History and Philosophy", "Pushkin Days in Polytech" and other festivals. Various concerts of classical and contemporary music, literary evenings and theatrical performances also take place in the Hall.

Information on availability of training and education facilities, sports facilities, nutrition conditions and health protection of students is published on the official website of the University in the "About Us" section (<https://www.spbstu.ru/sveden/objects/> (in Russian)).

System of feedback on the satisfaction with conditions and organization of the study process.

All SPbPU students, including those in the programmes of the "Business Informatics" cluster, can express their opinion on the issues of the academic process organization and material and technical facilities of the University through the independent "Quality of Education Programmes" survey, conducted annually by the Centre for Quality of Education.

The official "Public Appeals" section on the University website offers filling in the questionnaire on the quality of education provided by SPbPU (<https://goo.su/4l8d> (in Russian)).

SPbPU has a Student and Postgraduate Union that aims to pave the way for students to represent their interests in the administrative bodies and participate in the development and implementation of the University's study programmes (<https://goo.su/4l87> (in Russian)).

Graduate School of Business and Management regularly holds student meetings in order to collect information on conditions and organization of the educational process. The results of monitoring are further used to introduce improvements in equipping classrooms with the required technologies and software, and in selecting training enterprises for students, etc.

Feedback is also collected with the students coming from the foreign member-universities of the academic mobility programmes. Students share opinions on their educational background in foreign universities, which allows SPbPU to take this experience into account in order to improve academic training within the "Business Informatics" cluster.

Based on the data collected from the students' comments and suggestions, including those on the adjustment of curriculum, regular sessions and discussions are held by the Graduate School of Business and Management and the Academic Council of the Institute of Industrial Management, Economics and Trade.

Feedback is obtained via the modern communication tools: corporate e-mail, e-platforms of the university, survey forms on the SPbPU websites.

Availability of accessible information about opportunities for student mobility and its support system.

Students of the "Business Informatics" cluster are provided with an opportunity to study in a foreign university as members of the academic mobility programmes for one or two semesters. Information on academic mobility, including the list of partner-universities is available on the SPbPU website in the "International Networks and Alliances" section / International Activities / Academic Mobility (<http://www.spbstu.ru/academic-mobility/>, <https://english.spbstu.ru/students/study-abroad/>).

Students turn to the Department of International Educational Programmes and Academic Mobility for assistance in choosing the partner-university and completing the necessary paperwork. Supervisors of academic programmes can also offer their assistance in terms of selecting the partner-university.

The list of key foreign partners implementing the academic programmes that correspond to the focus of the "Business Informatics" cluster is presented in Annex H.

Conclusions on Standard 6:

Strengths:

- the University has sufficient infrastructure to comprehensively implement the study programme for all students, including physically challenged persons and people with disabilities;
- the Library complex provides full access to information, academic and scientific databases, including the foreign ones;
- SPbSTU has a unique cultural and academic environment that contributes to the development of social and educational aspects of learning.

Areas for improvement:

- further adaptation of the university's infrastructure for the disabled people and physically challenged persons is required;
- information, cultural and academic resources must be wider developed and improved in English;
- feedback from students on organization of the academic process must be better documented in order to facilitate monitoring.

2.7 Standard 7. Collection, analysis and use of information for managing the study programme

Availability and effectiveness of the system for collecting and monitoring information about the study programme.

The SPbPU study programmes are managed with the help of the following digital services and internal information systems providing IT support:

- automated control system – "Student" – used by the Institutes and other structural subdivisions of the University to monitor and control student enrollment;
- automated control system – "University Workload" – used by the Centre for Academic Programmes and other structural subdivisions of the University to manage the faculty workload of the University's teaching staff;
- electronic systems used by the University to design study programmes automatically – "SPbPU Repository of Study Programmes" (<https://plan.spbstu.ru/>);
- automated control system – "Study Calendar" (<http://ruz.spbstu.ru/>).

Unified authentication system allows the stakeholders to use a single account to access all digital services of SPbPU, ensuring differentiation of the access rights.

The study programme management makes up a part of the unified electronic environment of the University, which is fully integrated with all educational resources and is constantly developing in accordance with the SPbPU agenda.

Employability and career prospects are ensured by the Career Centre, which provides undergraduates and graduates with the access to key employers' database (<https://www.spbstu.ru/students/employment/> (in Russian)).

SPbPU hosts an annual "Youth Career Forum" where students and graduates get a unique opportunity not only to communicate with the representatives of the largest Russian and international companies, but also compete with each other, win valuable prizes and show their knowledge and skills by participating in business games and workshops. (<https://www.spbstu.ru/students/employment/job-fairs/> (in Russian)).

Information on employment and career development of graduates is collected by the Alumni Centre for Fundraising. Graduate School of Business and Management carries out additional monitoring of employment among the graduates of the "Business Informatics" cluster (Annex J).

The Centre for Education Quality conducts surveys in order to collect and examine data on the level of satisfaction with the implementation of study programmes and learning/working conditions among the faculty and students. Data collection is realized via the unified SPbPU platforms and services, Moodle, and Google forms. The SPbPU Institutes obtain the preliminary processed data in order to develop the range of improvement measures.

At the Institute level, heads of study programmes monitor students' satisfaction with the implementation of their programmes through holding

regular student meetings, temporarily transformed into online conferences in MS Teams due to the pandemic.

Digital services of SPbPU enable students to access the necessary academic resources and reach the student support offices.

Students are notified on the current events and academic activities via their personal accounts and corporate mails.

The SPbPU faculty can use the distance learning platform based on LMS Moodle to share the academic and methodological materials with the students (<https://dl-imet.spbstu.ru//>). Digital services, including corporate mail and teacher's office are available for every faculty member.

Faculty members receive information via corporate emails, LMS Moodle, and regular sessions of the Graduate School.

Participation of students and staff of the educational institution in collecting and analyzing information for managing the study programme.

Students and employees of SPbPU manage and organize study programmes through their participation in the advisory bodies of the Institutes and the University (Academic Council of the Institute of Industrial Management, Economics and Trade, Academic Council of SPbPU, Education Board of SPbPU, etc.).

Student sessions, workshops and personal meetings with the heads of study programmes play a significant role in involvement of students and faculty in coordinating and managing study programmes.

In order to monitor attendance and performance of students, the Graduate School of Business and Management maintains constant links with the Centre for Study programmes of the Institute of Industrial Management, Economics and Trade.

Availability of the unified effective information system on the basis of modern technologies for managing the study programme.

SPbPU created a unified electronic information-educational environment (EIEE of SPbPU) which provides 24-hour access to all available e-resources and ensures the implementation of both mixed and remote learning.

The EIEE content is determined by the main stakeholders (administration, faculty, students, etc.) in accordance with the strategic goals of the University, quality assurance principles, relevance and accessibility of education through comprehensive e-learning technologies.

The EIEE hardware includes servers, computers and other equipment which ensures maintenance, development, and storage of software and data. It also comprises communication equipment that provides the faculty and students with access to the EIEE via local networks and the Internet.

The SPbPU EIEE software includes:

- electronic education platform "Open Polytech", Moodle, OpenEdx – distributed distance learning systems that ensure the integrated use of e-resources (<https://open.spbstu.ru/sistema-el/>);
- automated control system – "Student" – used by the Institutes and other structural subdivisions of the University to monitor and control student enrollment;

- automated control system – "University Workload" – used by the Centre for Academic Programmes and other structural subdivisions of the University to manage the faculty workload;
- electronic systems used by the University to design educational programmes automatically – "SPbPU Repository of Study Programmes" (<https://plan.spbstu.ru/>);
- electronic systems of student personification (personal accounts of applicants, students, postgraduates - <http://lk.spbstu.ru/>);
- software for video conferencing; plagiarism checking module "Anti-plagiat", online proctoring service, unified identification system, corporate e-mail;
- software for access to e-library systems (<http://elib.spbstu.ru/search/>, <http://library.spbstu.ru/ru>) and electronic academic resources specified in curriculum;
- software for server maintenance and interaction with the EEIE via the Internet;
- additional software for e-resources development;
- automated control system – "Study Calendar" (<http://ruz.spbstu.ru/>).

Conclusions on Standard 7:

Main strengths:

- unique and developed electronic information and educational environment (EEIE) provides effective implementation of study programmes under accreditation, and ensures their accessibility for all stakeholders;
- system for information collection and monitoring is multidimensional and integrating for the stakeholders.

Areas for improvement:

- mechanism for monitoring career prospects of the "Business Informatics" graduates is to be enhanced;
- functions of SPbPU information systems in terms of information analysis must be expanded.

2.8 Standard 8. Public information

Effective use of the official website of the study programme for its quality enhancement.

SPbPU pays special attention to the role of the University's official website <http://www.spbstu.ru> (<https://english.spbstu.ru/>) in keeping the public aware, shaping positive image and creating competitive advantage in education. According to Webometrics, February 2021, the SPbPU website ranks 6th among Russian universities, and 605th in the world. SPbPU enables access to the English, Spanish, and Chinese versions of the website. The version for the visually impaired persons was also designed.

Stakeholders and business partners determine the content significant enough to be published on the official website, in accordance with the University's Charter, including:

- "Education at Polytech" (<https://www.spbstu.ru/education/>) – a section containing all information on the study programme (structure, expected

outcomes, qualifications, quality of teaching, training forms and assessment criteria, academic prospects);

- "Prospective Students" section (<https://www.spbstu.ru/abit/>) comprehensively describes study programmes, training structure, admission requirements and information on open days;

- "Electronic information and educational environment" (<http://open.spbstu.ru/eios/>) – access to the University's e-platforms required at all stages of learning in order to provide the faculty and students with the interaction tools.

The University's website offers completing the feedback form in the "Public Appeals" section (<https://www.spbstu.ru/feedback/>) and a Questionnaire on the quality of education provided by SPbPU (<https://clck.ru/R7LJd>).

Structural divisions of the University have their own websites in the SPbPU domain zone (Institute of Industrial Management, Economics and Trade – <https://IMET.spbstu.ru/> (<https://imet.spbstu.ru/en/>); Graduate School of Business and Management – <https://business.spbstu.ru/> (<https://business.spbstu.ru/en/>)), which use all the data and feedback to improve the quality of programmes.

Information on study programmes published on the website is relevant and up-to-date.

Publication of complete and accurate information on the study programme and its results.

SPbPU actively uses the Internet and mass media to keep all stakeholders (applicants and their parents, students, faculty, employers, strategic partners) aware of the implemented study programmes, their outcomes and plans. All relevant information is available on the University's website.

The official SPbPU website publishes only comprehensive and reliable information, which is automatically updated through the "SPbPU Repository of Study Programmes" system.

The data published on the official website of the University is initially verified by the Public Relations Department of SPbPU. Functions of the PR Department include monitoring the quality of information and advertising materials in accordance with the University's requirements.

SPbSTU, its structural divisions and study programmes publish up-to-date information in their profiles on Facebook, Instagram, and VKontakte in order to efficiently interact with the stakeholders.

Publication of objective data on the employability of graduates.

SPbPU annually collects information on the graduate employment and transmits the data obtained to the Ministry of Education. The data of federal monitoring on graduate employment are publicly available (<http://graduate.edu.ru/>). Currently published data includes information on the integrated training groups up to 2016.

Up-to-date information on employment and demand for the programme graduates is also presented in promotional booklets and leaflets.

Integration in the environment, interaction of the educational institution with different professional associations and other organizations including those from abroad.

Career Development Department of SPbPU plans, organizes, supports and monitors various types of training programmes according to the curriculum; develops mutually beneficial areas for cooperation with industrial, scientific and business enterprises aimed at improving education, science, innovation and research; adjusts study programmes to meet the needs of labor market; conducts wide-scale University events (job fairs, career forums, engineering competitions, presentations, workshops) aimed at promoting career options for graduates and senior students.

Career Development Department maintains the Bank of vacancies located on the official SPbPU website (<https://clck.ru/ThWYp> (in Russian)). The Bank of vacancies provides access to description of job openings, names of organizations and their contacts, employer's requirements, number of vacancies, prospective salary, and details on potential duties (for example, working conditions and tasks to be performed in case the candidate is employed). The Bank also shows up-to-date information on the date of the issuance of vacancy announcements and their expiration date.

Career Development Department holds a wide range of events and meetings for the young employees and their potential employers to interact. These include job fairs, career forums, company workshops, round tables with representatives of the labor market, academic contests, lectures, guided visits to enterprises in Saint-Petersburg and the region, etc.

The Graduate School of Business and Management collaborates with various professional associations and enterprises to obtain bigger picture of employment prospects for the programme graduates and requirements on their qualifications and skills. Employers are vastly engaged in the education process. They teach a number of subjects, develop case studies together with the SPbPU faculty, and participate in the State Examination Board.

"Almazov National Medical Research Centre" of the Ministry of Health of the Russian Federation (<http://www.almazovcentre.ru/>) is one of the most outstanding SPbPU partners engaged in lecturing, organizing trainings, internships, etc.

Following the academic course completion, and the thesis presentation, SPbPU carries out discussions on the efficiency of measures taken to improve the quality of training. Recommendations are recorded in the reports of the State Examination Board and later serve as a basis for planning the strategy aimed at the improvement of study programmes.

In order to enhance the quality of training within the "Business Informatics" cluster, the Graduate School of Business and Management has developed a set of measures to strengthen connections with professional communities.

Conclusions on Standard 8:

Main strengths:

- comprehensive, transparent and reliable information on the University's activities presented on the official website of SPbPU;
- active and wide-scale involvement of various enterprises, interaction between employers and graduates.

Areas for improvement:

- functions of the English versions for the University's official websites are to be expanded, including the Institute of Industrial Management, Economics and Trade, and the Graduate School of Business and Management;
- mechanisms for collecting data on employment and market demand for the programme graduates must be improved;
- strategy for firming relations with the professional community requires additional update.

2.9 Standard 9. On-going monitoring and periodic review of study programmes

Documented procedures of monitoring and periodic review of study programmes should be in place

Study programmes are reviewed annually. Amendments are approved by the Academic Council of the University in accordance with the Regulations on the main study programmes: bachelor's programme, specialist's programme, master's programme, post-graduate programme (<https://imet.spbstu.ru/en/documents/>) and the Regulation on the implementation of basic study programmes (<https://imet.spbstu.ru/en/documents/>).

The development of study programmes is carried out by the methodological commission within the framework of the Graduate School of Business and Management under the guidance of the Head of the study programme in cooperation with the Directorate of main study programmes and in coordination with the companies in the relevant market segment. Study programmes are reviewed by the representatives of the industry. The updated study programme is reviewed at a meeting of the Educational and Methodological Council of the Institute of Industrial Management, Economics and Trade and submitted to the Educational and Methodological Council of the University, then to the Academic Council of the University.

The syllabi are reviewed annually in terms of the development of science, technology, culture, economics, technology and the social sphere.

The lists of basic and additional literature are annually updated taking into account the new literature acquired and published at the university.

Independent surveys are conducted annually on student satisfaction with learning, and lecturers' surveys on the quality of study programmes are conducted as well.

Availability of a feedback mechanism for students, employers, branch ministries and departments (key stakeholders in employment) in the process of monitoring and periodic review of a study programme.

In order to obtain up-to-date information on the quality of study programmes of the Business Informatics cluster, the management of the Graduate School is monitoring employers' feedback on the quality of graduates' training.

Graduates of the School regularly get positive feedback from employers on the quality of graduates' education and training, which is confirmed

by letters of thanks and references from enterprises such as KORUS CONSULTING GK LLC, SAP CIS LLC, Dialogue IT LLC, NAUKA LLC, Netrika LLC, National Medical Research Centre named after V.A. Almazov.

Employers highly evaluate the level of professional competencies of the graduates.

The competencies of graduates are tested by the lecturers, supervisors of academic and industrial internship, the chairman and members of the State Examination Commission (SEC) and employers. The mechanism for adjusting learning outcomes is based on the opinions of students, lecturers and employers by means of questionnaires, reviews, reports of the chairmen of the SEC.

Internship supervisors assess the performance of the students during their work at the enterprise. Based on the results of the internship, students draw up a report, which is checked by the supervisors from the enterprise and from the Graduate School of Business and Management. Following the internship, the necessary adjustments are made to the working programmes for core disciplines, taking into account the requirements of the employer in terms of the students' competencies. The results of the employers' survey on the quality of graduates' training are also taken into account.

The cooperation with employers and the employment of graduates are annually discussed at the meetings of the Graduate School of Business and Management and the Academic Council of the Institute of Industrial Management, Economics and Trade.

Since 2020, the Centre for the Quality of Education has been conducting a survey of graduates and employers about the satisfaction with their education. The results are used to improve the quality of the implemented study programmes.

Effectiveness of procedures for monitoring and periodic review of the study programme (enhancement of programmes).

Based on the results of monitoring and periodic review of study programmes, the syllabi of the programmes are revised annually. Thus, based on the opinions of employers and students, the content of study programmes is updated, the professional competences of the academic staff are enhanced, and new solutions for organizing the learning process are made.

In particular, following the results of monitoring and periodic review of study programmes, the academic staff involved in the programme was expanded, and students' training in the field of assessing the economic efficiency of the architectural design was advanced.

The internal evaluation of the study programmes allows the management of the Graduate School and coordinators of study programmes to assess the achievement of the goals and expected outcome.

Conclusions on standard 9:

Strengths:

- SPbPU has developed the system for monitoring, periodic evaluation and revision of study programmes;

- feedback mechanisms allow to involve students in the periodic review of the study programme;
- professional community is involved in the work of state examination commissions and provides feedback on the graduates' performance.

Areas for improvement:

- it is necessary to expand cooperation with employers, branch ministries and departments to monitor the changing needs and expectations of the professional community;
- more active involvement of graduates and employers in monitoring the effectiveness of study programmes is required.

2.10 Standard 10. Cyclical external quality assurance of study programmes

Cyclical external evaluation of the study programme.

SPbPU undergoes external quality assurance of study programmes on a cyclical basis in accordance with the national legislation. External quality assurance in its various forms can verify the effectiveness of the university' internal quality assurance, act as a catalyst for improvement and offer the university new perspectives.

Once in six years, the university undergoes the state accreditation procedure (certificate of state accreditation dated December 26, 2018 No. 2973, <https://clck.ru/Tf39U>), and annually the university undergoes the procedure for self-evaluation and monitoring of the educational organizations of the Ministry of Education and Science of Russia. The results of the assessment are published in the University Self-Evaluation Reports, which are posted on the website (<https://clck.ru/ThWju> (in Russian)).

In October 2020, SPbPU became a participant in an external evaluation of the study programmes' quality carried out in accordance with Article 95.2 of the Federal Law of December 29, 2012 No. 273-FZ «Education in the Russian Federation» once in three years.

The external evaluation was carried out taking into account the opinions of students and lecturers on the following indicators:

- openness and availability of information about the university;
- comfortable conditions for learning;
- accessibility of services for people with disabilities;
- friendly attitude and politeness of the staff;
- students' satisfaction with learning.

The evaluation procedure included an opinion poll of students, lecturers and administrative staff of SPbPU, the analysis of the university website, and a visit of an independent expert. SPbPU was rated high as evidenced by the issued certificate of the participant (*Annex K*).

The SPbPU project «Comprehensive system of professional development and assessment of academic staff competencies in personnel management of the university» took first place in the nomination «Best HR technology for personnel evaluation» of the contest «Best HR technologies of St. Petersburg - 2020» (<http://www.kkt.kadrsov.ru/>) (*Annex L*).

In 2021, SPbPU showed positive dynamics in the QS World University Rankings by Subject 2021, formed by the British company Quacquarelli Symonds (QS). For the first time, the university entered the ranking in the subject of «Business and Management» (QS Subject, Social Sciences, Business & Management Studies), taking 451-500 place, and in the subject «Economics and Econometrics» (QS Subject, Social Sciences, Economics & Econometrics) advanced by 100 points, taking 301-350 place.

Study programmes in Business Informatics 03.38.05 were included in the directories of «The Best Study Programmes of Innovative Russia» in 2019 and 2020 as part of a project implemented since 2010 by the Guild of Experts in the Field of Professional Education, the National Centre for public accreditation and the journal «Accreditation in Education» (<https://hedclub.com/en/papers>).

Availability of a corrective actions programme to follow up the results of external evaluation of study programmes.

Corrective actions following up the external evaluation are carried out in accordance with the SPbPU regulations. Based on the outcomes of the external evaluation of the study programme, a corrective actions programme is approved, which stipulates (if necessary):

- 1) amendments into syllabi and re-approval at the meetings of Graduate Schools and departments in accordance with the results of external evaluation and identified drawbacks;
- 2) accounting for information from experts (reviews of employers);
- 3) changes in the main study programmes in accordance with the procedure approved by SPbPU.

Thus, SPbPU has an effective system of corrective actions based on the outcome of the external evaluation. The implementation of this programme helps to assess the quality of study programmes and the performance of the academic staff.

Consideration of the results of previous procedures of external evaluation when conducting subsequent external procedures.

The results of the external evaluation of the study programmes quality are taken into account when correcting them and planning the subsequent external procedures. Based on the results of the previous external evaluation, management of the Institute of Industrial Management, Economics and Trade designed a roadmap for the strategic development of the Institute with the Strategic initiatives for educational, scientific, international, economic activities, and for the development of the Institute's facilities (<https://imet.spbstu.ru/en/documents/>).

Conclusions on Standard 10:

Strengths:

- study programmes of the accredited cluster successfully pass the procedure of state accreditation, as well as other procedures of external evaluation;
- SPbPU is rated high in international subject rankings, where the academic status of the university is a significant component.

Areas for improvement:

- integration of the best international practices for updating the content of study programmes is required;
- information on the results of external quality assurance should be available on the university website.

III CONCLUSIONS

The results of self-evaluation of the study programmes in «Business Informatics» (38.03.05, 38.04.05) implemented in Peter the Great St. Petersburg Polytechnic University allowed expert panel to make the following conclusions.

1. SPbPU management is focused on continuous quality improvement in accordance with the university development strategy. At SPbPU, there is the regulation of the internal quality assurance system and the local regulatory framework is constantly updated in accordance with the development goals of the university. The Student Commission for the Quality of Education at SPbPU is an active participant in the quality assurance procedures.

2. The development of accredited study programmes is carried out in accordance with the Mission and Development Strategy of the University.

This is reflected in the clearly set goals and approved strategies for the development and updating of study programmes and the participation of all stakeholders in this process. The documented procedures for the evaluation of SPbPU students' competencies are in place. The criteria, requirements and procedures for study programmes evaluation are available for students, lecturers and all stakeholders. The system for evaluation of students' competencies during current monitoring, intermediate certification and final state certification is compliant with the planned learning outcomes, and the assessment criteria are consistent with teaching methods and employers' requirements. The ongoing interaction of students with the supervisors of study programmes and the administration of educational structural units contributes to the efficiency of the educational process.

3. There are effective and transparent procedures at SPbPU for enrollment, re-enrollment, and transfer of students to other universities. There is an ongoing dialogue with international students. SPbPU students are involved in academic mobility programmes. SPbPU has its own Centre for the verification of international diplomas. The University has the right to acknowledge the international qualifications, academic degrees and titles for the admission of foreign students and the involvement of foreign lecturers in the basic study programmes at SPbPU. There is a high level of international academic mobility of students majoring in «Business Informatics», which is confirmed by the statistics on academic mobility of students over the past 5 years.

4. The most competent and highly professional lecturers are involved in the implementation of the «Business Informatics» cluster programmes. Most of them are engaged in various projects and research, which is confirmed by their participation in grants from the Russian Foundation for Basic Research and the Russian Science Foundation, and branch industry contracts. The lecturers regularly upgrade their qualifications and participate in various international, all-Russian and university conferences, round tables, seminars and exhibitions. The strengths of the personnel potential of the Graduate School of Business and Management are its scientific and methodological background and system of training highly qualified personnel. The university has developed effective mechanisms for academic staff performance appraisal and the system of incentives.

5. The analysis of the resources for the implementation of the study programmes of the cluster reveals a high level of technical equipment, educational and methodological support, the accessibility to modern information databases, which is vital for the effective research and training of students. SPbPU has developed a system of social and educational interaction with students.

6. SPbPU has created a unique electronic information and educational environment that ensures the effective implementation of accredited study programmes, their accessibility and openness to all stakeholders. The developed system for collecting and monitoring information is multifaceted and takes into account the views of all interested parties.

7. Electronic information and educational environment and digital services of SPbPU are one of the main conditions of educational activities, ensure the integration of all university resources, including electronic textbooks and local network teaching aids, which is the main condition for the effective quality management of education.

8. The University ensures the openness of information in all areas of its activity on the official website. Information about the Graduate School of Business and Management, as well as the study programmes of the cluster, is regularly updated on the SPbPU website. The Graduate School of Business and Management works in cooperation with various professional associations. The official website of SPbPU is used to improve the quality of «Business Informatics» study programmes.

9. SPbPU cyclically undergoes the external quality evaluation of study programmes, including state accreditation. The university is rated high in international subject rankings, where the academic status of the university is a significant component.

10. The management of the Institute of Industrial Management, Economics and Trade and the Graduate School of Business and Management bring up the issues for consideration (expanding the geography of students' enrollment in master's programmes, attracting employers to targeted training of students, developing networked educational programmes, participating in independent quality assessment projects (Federal Internet testing, etc), expanding the partner network of colleges, developing academic mobility of teaching staff, etc), and are ready to solve them.

The cluster of study programmes in the major «Business Informatics» (03.38.05, 04.38.05) is ready to undergo the procedure of international professional and public accreditation.

ANNEXES

Annex A.1. Brief description of the study programme 38.03.05_01 Enterprise architecture (<https://imet.spbstu.ru/en/programs/>)

Annex A.2. Brief description of the study programme 38.03.05_02 E-business (<https://imet.spbstu.ru/en/programs/>)

Annex A.3. Brief description of the study programme 38.04.05_02 Business Engineering (International Study Program) (<https://imet.spbstu.ru/en/programs/>)

Annex A.4. Brief description of the study programme 38.04.05_04 Digital Healthcare (<https://imet.spbstu.ru/en/programs/>)

Annex A.5. Brief description of the study programme 38.04.05_05 Digital Marketing and E-Business (<https://imet.spbstu.ru/en/programs/>)

Annex B.1. Curriculum of the study programme 38.03.05_01 Enterprise architecture (<https://imet.spbstu.ru/en/programs/>)

Annex B.2. Curriculum of the study programme 38.03.05_02 E-business (<https://imet.spbstu.ru/en/programs/>)

Annex B.3. Curriculum of the study programme 38.04.05_02 Business Engineering (International Educational Program) (<https://imet.spbstu.ru/en/programs/>)

Annex B.4. Curriculum of the study programme 38.04.05_04 Digital Healthcare (<https://imet.spbstu.ru/en/programs/>)

Annex B.5. Curriculum of the study programme 38.04.05_05 Digital Marketing and E-Business (<https://imet.spbstu.ru/en/programs/>)

Annex C. Achievements of study programmes of the «Business informatics» cluster

Annex D. The most significant achievements of students of the «Business Informatics» cluster

Annex E. International academic mobility of students in the major of «Business Informatics» for 2016-2020

Annex F. Academic staff involved in study programmes of the «Business Informatics» cluster

Annex G. Upgrade qualifications of the Graduate School of Business and Management teaching staff involved in the programmes of the «Business Informatics» cluster

Annex H. List of foreign partner universities in line with the programmes of the «Business Informatics» cluster

Annex I. International academic mobility of the teaching staff of the «Business Informatics» cluster for 2016-2019

Annex J. Information about the employment of «Business Informatics» graduates

Annex K. Participant Certificate of Independent quality assurance procedure

Annex L. Diploma of the contest winner «The best personnel technologies of St. Petersburg - 2020»