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ITMO University's educational standard of higher education: Bachelor's programs

St. Petersburg
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ITMO University's educational standard of higher education (ITMO ES) is developed in accordance with the procedure approved by ITMO University, federal law № 273-FZ "On Education in the Russian Federation," including paragraph 10 subparagraph 11 which gives educational organizations of the *national research university* category the right to develop and approve their own educational standards for higher education programs and educational tracks.

At the core of the new ITMO ES are elements of the ITMO Code: values, fundamental, soft skills, and professional skills, abbreviated as V+F+SS+PS.

ITMO ES is similar to the federal standards of higher education and aligns with them in regard to ensuring consistency, variety of content, and quality of education, as well as establishing requirements for the development of educational programs (EP) offered at ITMO University.

The requirements for implementation and results of completion of educational programs of higher education which are part of ITMO ES cannot be lower than the requirements of the federal educational standards for higher education.

ITMO ES was developed as a common standard for Bachelor's programs and is based on common requirements for results (graduates' competencies) and structure of educational programs.

The purpose of ITMO ES is to create conditions for social, personal and professional development of students via the personalization of higher education based on ITMO's values.

ITMO's educational environment provides for balanced comprehensive development and training of professionally competitive graduates via the acquirement and development of the following competencies:

- fundamental (social, personal and cultural) and soft skills;
- basic professional skills;
- professional skills.

An educational program – as an aggregate of basic characteristics of education (the scope, content, expected results), the organizational and pedagogic environment, and the formats of assessment – is developed by the respective head of program based on educational standards of educational products produced by ITMO, its corporate partners, and other universities, including educational products delivered in an online format, with regard to the specifics of the target audience of the program and every student, under the condition that graduates receive the corresponding competencies and the systemic approach to education within the framework of the educational program is preserved.

While designing and implementing an EP, the head of the program must ensure conditions in which students can make a conscious choice of the content, formats, pace, and length of study in the program.

For an ITMO student, an educational program is a trajectory based on interconnected disciplines, modules, various academic, scientific, and social activities, as well as effective means of design and support of their individual learning track. The result of mastering a program is the formation of a personalized set of competencies.

Legal documents

- Federal law № 273-FZ “On Education in the Russian Federation” (with effective amendments) dated December 29, 2012;
- The list of specializations and subject areas of higher education programs approved by the order № 1061 (with effective amendments) of the Ministry of Education and Science of the Russian Federation dated September 12, 2013;
- The list of specializations and subject areas of higher education programs approved by the order № 89 of the Ministry of Science and Higher Education of the Russian Federation dated February 1, 2022;
- Federal state educational standards for subject areas;
- Order of the Ministry of Science and Higher Education of the Russian Federation "On Amendments to the Federal State Educational Standards of Higher Education” № 662 dated June 19, 2022;
- The procedure for the organization and conduct of educational activities in accordance with educational programs of higher education – Bachelor’s, Specialist and Master’s programs approved by the order № 245 of the Ministry of Science and Higher Education dated April 6, 2021;
- The procedure for the conduct of State Final Examination for educational programs of higher education – Bachelor’s, Specialist and Master’s programs approved by the order № 636 (with effective amendments) of the Ministry of Education and Science dated June 29, 2015;
- Order on the practical training of students approved by the order № 885/390 of the Ministry of Science and Higher Education dated August 5, 2020;
- Professional standards approved by orders of the Ministry of Labour and Social Protection of the Russian Federation.

Key terms used in ITMO ES

- **type of professional activity** — a combination of labor functions that require statutory professional training and are considered in the context of application in a particular field characterized by specific objects, conditions, instruments, character, and results of labor;
- **individual educational program** — the educational program of a specific student that is developed by them for the formation of a personalized set of their competencies as a future graduate using the educational products from the pool of disciplines (modules) and projects based on the educational program they joined;
- **competency mastery indicators** — generalized characteristics that clarify and expand the definition of a competency through specific actions that a graduate who mastered the competency is capable of. The competency mastery indicators have to be measurable by means available as part of the educational process;
- **qualification** — the level of competencies that characterizes a graduate's preparedness to solve specific types of tasks associated with the professional activities specified in the educational program;
- **additional qualification —** the level of competencies that characterizes a graduate's preparedness to solve specific types of tasks associated with professional activities of a different type than those specified in the educational program;
- **fundamental competencies (social, personal, and cultural competencies)** — the combination of competencies that relate to an individual's personal qualities as well as their interactions with other people, communities, and the society in general; these competencies contribute to the individual's inclusion in the global cultural space, their self-identification in this space, and their capability to apply their knowledge and skills in practice, including the ability to navigate in the society;
- **competency** — the ability and preparedness to apply knowledge, skills and personal qualities for successful operation in a specific field;
- **module** — a combination of parts of an educational discipline or several disciplines that has a specific scope and logical consistency in regards to the tasks and expected results of training;
- **minor —** a module that is aimed at the formation of additional competencies in fields that differ from the field of professional activity associated with the educational program. Mastering a minor can be a sign of additional qualification;
- **soft skills** — general unspecialized skills that are associated with personal qualities, social attitudes, and managerial skills that increase the efficiency of work and interactions with other people;
- **field of professional activities** — a combination of professional activities in their scientific, social, economic, and production aspects (is established by an order of the Ministry of Labour and Social Protection of the Russian Federation);
- **basic professional skills** — a combination of competencies that correspond with the demands of the labor market in regard to the graduates' mastery of fundamental basics of their professional field and in light of the field's potential development (regardless of the program's focus on specific professional activities or fields of knowledge);
- **objects of professional activity** — objects, phenomena, and processes at which professional activities are directed;
- **mandatory part of the educational program** — the part of the program that includes modules and disciplines that contribute to the formation of fundamental competencies (social, personal, and cultural) and soft skills;
- **expected results of training for all disciplines (modules) and practical training** — knowledge and skills that a student has to demonstrate in every discipline (module) and internship upon graduation;

- **expected results of completion of educational program** — graduates' fundamental competencies (social, personal, and cultural), soft skills, and basic professional skills;
- **professional skills** — a combination of competencies that correspond with the demands of the labor market in regards to the graduates' ability to conduct specific types of professional activity and the associated labor functions;
- **subject-specific part of an educational program** — the part of a program that includes modules, disciplines, and practical training for the corresponding specializations (tracks) of programs and is aimed at the formation of basic professional and professional skills, as well as the development of fundamental competencies (social, personal, and cultural) and soft skills;
- **System 360** — a system for the assessment of the quality of implementation of modules (disciplines) and the quality of the support for the implementation of modules (disciplines);
- **specialization —** in-depth study of a relatively narrow field of professional activity that ensures the graduates' appropriate level of qualification as required for the conduct of labor functions;
- **field of professional activity** — field of activity that defines the trajectory and scope of a graduate's professional activity. Is formed additionally to a graduate's fields of professional activity listed by the Ministry of Labour and Social Protection of the Russian Federation;
- **types of professional activity** — provisional classification of tasks associated with professional activity by the character of actions performed;
- **learning analytics** — data on a student's experience, including educational experience, the mechanisms of its collection and analysis, as well as services for provision of students with this data so they can design their individual educational program;
- **format of the implementation of an educational program —** the technology and (or) means of interaction between lecturers and students of an educational program, including with the use of e-learning and remote learning technologies. Among those are the following formats:
  - **online format** — synchronous and asynchronous interaction of lecturers and students in a remote format.
  - **offline format** — direct synchronous interaction of lecturers and students in classrooms, laboratories, and other spaces where educational activities take place, as well as supervision of students' individual studies;
  - **blended format** — synchronous and asynchronous interaction of lecturers and students that combines the traditional format of studying in classrooms with elements of e-learning and the use of remote learning technologies.

I. General provisions

1.1. ITMO University's educational standard for higher education is a combination of mandatory requirements for the development and implementation of basic professional educational Bachelor's programs of higher education. A Bachelor's program is developed and implemented for one or several program tracks.

1.2. Bachelor's programs at ITMO University are conducted intramurally.

1.3. The content of training is defined by educational Bachelor's programs that are developed and approved at ITMO University. During the development of educational programs, requirements for their completion are presented as a list of fundamental (social, personal and cultural) skills, soft skills, basic professional skills, and professional skills.

1.4. In the course of the implementation of an educational program, ITMO University has the right to make use of e-learning and remote learning technologies. E-learning and remote learning technologies used in the course of training people with disabilities shall feature options for information exchange in formats accessible to these individuals.

1.5. An educational program can be implemented in the following formats: online (if that does not contradict the requirements of federal state educational standards for higher education for the corresponding educational track); offline; blended.

1.6. The implementation of an educational program can be conducted by ITMO University on its own or jointly with a partner organization.

1.7. Bachelor's programs are delivered in the official language of the Russian Federation (Russian) or in another language in accordance with ITMO University's local regulations.

1.8. The length of completion of an educational program (irrespective of the educational technologies used):

- including the time off provided after the completion of the state final examination – no longer than 2 years;
- when following an individual study plan for people with disabilities, the term can be prolonged per their request by no longer than six months than the length of completion established for the corresponding educational format.

1.9. The academic workload of an educational program (including in the accelerated education format) amounts to 240 credits irrespective of format, educational technologies used, whether the program is implemented by ITMO University on its own or jointly with a partner organization, or whether the student follows an individual curriculum.
The academic workload implemented in one academic year can amount to no more than 80 credits;

1.10. The head of an educational program, jointly with the student, determines the length of completion of an individual educational program (individual curriculum), including in the format of accelerated education, within the term and workload established in paragraphs 1.8 and 1.9 of ITMO ES.

1.11. The length of completion of an educational program is the time required to acquire competencies specified as the results of completing the educational program.

1.12. An educational program that contains information which is a state secret is developed and implemented in accordance with the requirements envisioned in the legislation of the Russian Federation and other regulations in the field of state secret protection.

1.13. The fields of professional activity in which graduates who have mastered their program (hereinafter graduates) are defined by the head of the program in accordance with the lists of fields and types of professional activities published by the Ministry of Labour and Social Protection of the Russian Federation[1], top-priority areas of scientific and technological development of the Russian Federation, and ITMO Universtity's development program.

1.14. As part of their training in their chosen Bachelor's program, the graduates can prepare to carry out professional tasks of the following types:

[1] https://profstandart.rosmintrud.ru/

- audit;
- analytical;
- communicative;
- consulting;
- creative;
- design;
- development;
- entrepreneurial;
- experimental;
- financial and economic;
- informational;
- innovative;
- maintenance;
- managerial;
- operational;
- pedagogical;
- production;
- project;
- research;
- social;
- technical;
- technological;
- testing.

1.15. For the purpose of decreasing the period for adaptation to professional activities, the program head establishes the program's focus during its development, with regard to:

- field (fields) of graduates' professional activity;
- type (types) of tasks included in graduates' professional activity;
- objects of graduates' professional activity;
- field (fields) of knowledge.

II. Requirements for completion of an educational program

2.1 As a result of completing their educational program, a graduate has to acquire competencies established by the Bachelor's program.

2.2 The educational program has to establish the following requirements for completion of an educational program (competencies):

Fundamental (social, personal and cultural) competencies

Competency category	Competency code and name	Competency mastery indice code and name
Outlook, values and self-fulfillment	CC-1. Uses a system of worldviews to pursue self-fulfillment, form a life strategy, and develop opinions and beliefs	CC-1.1 Identifies the goals of their activity, cognition methods, and ways to achieve the goals they set CC-1.2 Forms a self-improvement and self-fulfillment strategy based on their worldview as well as ethical and sociocultural values CC-1.3 Chooses the means of adaptation to the environment for the purpose of self-fulfillment
Thinking	CC-2. Can conduct search, critical analysis, and synthesis of information, apply systemic approach and design thinking for the solution of set tasks	CC-2.1 Analyzes and decomposes tasks by identifying their key components CC-2.2 Finds and critically analyzes information essential for solving a set task CC-2.3 Considers various solutions, nonstandard solutions included, assesses their benefits and drawbacks, as well as possible consequences with regard to their principles and values
Intercultural interaction	CC-3. Understands the intercultural diversity of society in sociohistorical, ethical, and philosophic contexts	CC-3.1 Finds and uses information about the cultural specifics and traditions of various social groups and individuals' health conditions that is essential for self-development and interaction with other people CC-3.2 Shows respect for the historic and cultural heritage and sociocultural traditions of various social groups based on the knowledge of the Russian history, including the key events and personalities within the context of human history and various cultural traditions, including various religions and ethical and philosophical systems CC-3.3 Is capable of meaningful interaction with other people based on mutual respect and with regard to their sociocultural and individual specifics, including health conditions, for the purpose of successful completion of professional tasks and facilitation of social integration and cooperation

Digital culture	CC-4. Can apply digital technology to analyze and find solutions to philosophical, social, personal, and professional problems and processes that define one's existence in the digital environment, with regard to legal and ethical standards of human - AI interaction	CC-4.1 Applies technologies for collection, interpretation and analysis of information that's essential to the achievement of set goals CC-4.2 Can apply and adapt the available methods and technologies of working with information to new tasks in accordance with changes in social and economic environment
Entrepreneurial culture	CC-5. Can initiate business projects, make meaningful economic decisions in various fields, assess risks, and demonstrate personal qualities that are essential for their implementation	CC-5.1 Assesses opportunities and initiates business projects, models business processes and uses methods for re-organizing business processes CC-5.2 Assesses the potential risks, takes responsibility for such risks as part of the implementation of business processes, is intolerant to corrupt practices CC-5.3 Identifies the reasons for failures and corrects strategies for attainment of the chosen strategic and tactical goals
Civil defense	CC-6. Is able to create and maintain safe conditions in daily life and professional activity for the preservation of the environment, contribution to society's sustainable development, including at times of emergency	CC-6.1 Provides for safe and/or comfortable work conditions at their workplace with the use of safety equipment, including for people with disabilities CC-6.2 Identifies and resolves problems associated with violation of workplace safety CC-6.3 Takes action to prevent emergency situations (of both natural and man-made origin) in the workplace, including with the use of safety equipment CC-6.4 Participates in rescue and other emergency response operations

Soft skills

Competency category	Competency code and name	Competency mastery indice code and name
Development and implementation of projects	SS-1. Can identify the scope of tasks that are associated with the goal and choose the optimal solutions with regard to the current law, available resources, and limitations present	SS-1.1 Within the scope of a project's goal, forms a combination of interrelated tasks that are essential for its attainment. Identifies the expected results of the solution of these tasks SS-1.2 Designs an optimal solution for a specific task that's part of a project based on the current law, available resources, and limitations present SS-1.3 Solves specific tasks of a project with a sufficient level of performance and within the set time SS-1.4 Publicly presents the results of the solution of a specific task associated with a project

Teamwork and leadership	SS-2. Is capable of social interactions and can act according to their role in a team	SS-2.1 Uses teamwork strategies for the attainment of the set goal, understands a team's structure, can identify their role in a team SS-2.2 Accounts for the specifics in the actions of specific groups of people, including people with disabilities, with whom they work/interact SS-2.3 Forecasts the results (consequences) of their actions and plans the sequences of steps essential for the achievement of desired results, growth and development of their team SS-2.4 Interacts with other team members, participates in the exchange of information, knowledge and experience when presenting their team's results
Communication	SS-3. Is capable of verbal and written business communication in Russian and a foreign language (languages)	SS-3.1 In Russian and other languages, chooses a suitable style of communication, verbal and non-verbal means of interacting with partners SS-3.2 Uses digital technologies when searching for the necessary information when solving standard communication tasks in Russian and other languages SS-3.3 Maintains communication, including in the virtual space, with regard to the specifics of business and informal communications and sociocultural differences, in Russian and other languages SS-3.4 Uses dialogic communication for interactions in academic and professional fields, demonstrates skills of giving meaningful feedback and substantiating their arguments
Self-organization and self-fulfillment (including personal well-being)	SS-4. Can manage their time, design and implement their self-fulfillment path based on the principles of continuous learning	SS-4.1 Recognizes their own resources and the limits of those resources when aiming for a successful completion of their tasks SS-4.2 Plans long-term objectives for their activities with regard to their environment, resources, personal capabilities, career progress, the development prospects of their professional field, and labor market demands SS-4.3 Implements the planned course of action with regard to the conditions, resources, personal capabilities, career progress, the development prospects of their professional field, and labor market demands SS-4.4 Critically evaluates the efficiency of the expenditure of time and other resources when solving set tasks, as well its efficiency in relation to the obtained results SS-4.5 Shows interest in education and uses the opportunities they have to obtain new

		knowledge and skills
	SS-5. Maintains a sufficient level of physical training essential for productive social and professional activity	SS-5.1 Maintains a sufficient level of physical training essential for productive social and professional activity and leads a healthy lifestyle SS-5.2 Uses their knowledge of physical education to make a conscious choice in favor of using healthier technologies with regard to the internal and external conditions of the implementation of a specific professional activity

Basic professional skills

Competency category	Competency code and name	Competency mastery indice code and name
Application of fundamental and basic professional skills in professional activity	BPS-1. Can apply knowledge of mathematics, natural sciences, and general professional knowledge for the purpose of understanding the world around them and solving tasks associated with their professional activity	BPS-1.1 Is capable of planning their own activities for the purpose of solving their professional tasks BPS-1.2 Substantiates and uses the laws and methods of mathematics and natural sciences for the purpose of solving the tasks of their professional activity
Conduct of professional activity	BPS-2. Can conduct professional activity with regard to the economic, financial, ecological, intellectual rights and legal, social, ethical, and other limitations at all stages of the life cycles of the objects of their professional activity and processes based on the assessment of their efficiency and results	BPS-2.1 Substantiates the solutions they make when conducting professional activity BPS-2.2 Chooses means and technologies, including with regard to the consequences of their use in their professional field. Studies the limits of the applicability of specific solutions within the context of their professional activity BPS-2.3 Partakes in the planning and design of current and future plans of project development in their professional field BPS-2.4 Assesses the efficiency of the results of professional activity BPS-2.5 Identifies the priorities of professional activity and ways to improve it
Modeling of systems and processes in professional activity	BPS-3. Can formulate, design and apply models to manage the attainment of the expected results and objects of professional activity based on their knowledge of mathematics, programming, and software	BPS-3.1 Identifies and formulates the target characteristics of an object of modeling BPS-3.2 Decides on the methods for describing objects and their corresponding models BPS-3.3 Creates models of processes and objects of professional activity based on their knowledge of mathematics, programming, and standardized software packages BPS-3.4 Tests and implements models in their professional activity and corrects them if necessary BPS-3.5 Applies models of objects and

		processes, assesses the attainment of target characteristics and indices in professional activity BPS-3.6 Interprets and presents the results of the modeling of processes and objects of professional activity
Conduct of theoretical and experimental research	BPS-4. Is capable of theoretical and experimental research in their field of professional activity, including the conduct of an experiment, verification of its results, and the analysis, interpretation, and presentation of data	BPS-4.1 Formulates and analyzes the tasks of a research BPS-4.2 Searches for and processes information from print and digital media BPS-4.3 Chooses the optimal methods and means of theoretical and experimental research BPS-4.4 Conducts experiments and assesses their results BPS-4.5 Documents the results of research and substantiates their practical and theoretical significance
Use of digital technologies and artificial intelligence	BPS-5. Can apply digital technologies, including special methods, software, computer equipment, and AI technologies for the purpose of solving the tasks of professional activity, in compliance with the standards and regulations regarding the filing of project paperwork and information security requirements	BPS-5.1 Uses digital technologies, including information systems and databases, AI systems and systems for analyzing and processing data in their professional field, in compliance with information security standards and requirements BPS-5.2 Chooses, learns to use and uses computer and network hardware and software in their professional activity BPS-5.3 Uses artificial intelligence technologies in development of algorithms, methods, and means of automation of processes associated with their professional field BPS-5.4 Analyses and develops design documentation, technical, and (or) business standards based on the standards of their professional field

2.3 Professional competencies established by the educational program are chosen by the program head based on their analysis of the labor market demands, generalization of national and international experience, trends in global research and technological development, consultations with the leading employers in the field, as well as professional standards that correspond with graduates' professional activity (if applicable).

2.4 The program head chooses professional standards in order to identify professional competencies based on professional standards.

For each of the chosen standards, the program head selects one or several generalized labor functions (hereinafter GLF) that correspond with graduates' professional activity based on the level of qualification and requirements of paragraph "Requirements for education and learning"

as established in the professional standard for GLF[2]. A GLF can be selected partially or in its entirety.

2.5 The combination of competencies established by the educational program has to give the graduate the ability to conduct professional activity in no less than one field of professional activity in accordance with 1.13 of ITMO ES, and solve tasks associated with professional activity of no less than one type, established in accordance with paragraph 1.14 of this educational standard.

2.6 The head of the program establishes the indicators for the mastering of professional skills for the educational program.

2.7 The combination of expected results of training for disciplines (modules) and internships has to ensure that graduates master all competencies established for the educational program.

2.8 The program head establishes the expected results for disciplines (modules) and internships that have to correspond with competency mastery indicators established for the educational program, and supervises their attainment.

[2] Order of the Ministry of Labour and Social Protection of the Russian Federation № 148н "On approval of the levels of qualification with the purpose of the development of projects of professional standards" dated April 12, 2013 (registered by Ministry of Justice of the Russian Federation on May 27, 2013, № 28534).

III. Requirements for the structure of an educational program

3.1 An educational program includes the following elements:

Element 1 Modules (disciplines);

Element 2 Practical training;

Element 3 State final examination;

Element 4 Elective modules (disciplines).

3.2 Structure and workload of an educational program

An educational program has two parts – the core part and the field-specific part, both of which include mandatory and elective (chosen by the student) modules (disciplines) and practical training.

Modules (disciplines) of the core and elective parts, as well as various types of practical training from Element 2. Practical training, provide for the formation of fundamental competencies and soft skills.

Modules (disciplines) of the elective part and various types of practical training from Element 2. Practical training, provide for the formation of basic professional skills, professional skills, fundamental competencies, and soft skills.

Table1. Structure and workload of an educational program in accordance with ITMO Code (V+F+SS+PS)

Elements	Parts	Competencies	Program structure	Credits
Element 1. Modules (disciplines)	**Modules (disciplines)**			**no less than 156**
	Core	CC, SS	Fundamental training (soft skills)	
	Field-specific	BPS, PS, CC*, SS*	Individual professional training	
Element 2. Internship	Field-specific	PS, CC*, SS*, BPS*	**Practical training**	**no less than 15**
			Industrial practical training **and (or)** Research training **and (or)** Project work **and (or)** other types of practical training that provide students with authentic career-building experience	no less than 9
			Pre-graduation internship	6
Element 3. State Final Examination		confirmation of qualifications and competencies	Preparation for thesis defense and thesis defense	**6**
Workload of a Bachelor's program				**240**
Element 4.		CC*, SS*, BPS*,	● University's common pool of elective	

Elective modules (disciplines)		PS*	disciplines ● Program-specific pool of elective disciplines ● Adaptive electives for students with disabilities ● Adaptive disciplines for the alignment of the level of training (mathematics, physics, foreign language, etc.)	

* the competency set is established by the program head

3.3 Element 1. Modules (disciplines) consist of fundamental training (soft skills), as well as professional skills.

3.4 Fundamental training consists of modules (disciplines) aimed at the development of CC and SS and includes modules (disciplines) on thinking, foreign language, science-driven entrepreneurship, creative technologies, digital culture and artificial intelligence, soft skills. The list of modules (disciplines) is formed by heads of ITMO competency centers, and may be formed on request from program heads.

3.5 Fundamental training features disciplines (module) History of Russia that amounts to 4 credits. The academic workload that students complete in direct contact with educational staff in this module should be no less than 80% of the workload allocated to the implementation of this this discipline (module).

3.6 Individual professional training consists of modules (disciplines) aimed at forming BPS and PS, as well as further development of CC and SS, ensuring the continuity of the results of training and individual levels of their attainment. The set of modules (disciplines) is formed by the program head.

3.7 For the purpose of personalizing education, pools of modules (minors included), disciplines, and projects (hereinafter – pools of educational products) are created, including with participation of ITMO's partners.

3.8 Head of the program designs the program using various educational products from these pools for the purpose of attaining the results of mastering the program.

3.9 A student who joins the educational program uses educational products to assemble an individual educational program (IEP) based on educational analytics and on the condition that competencies correspond to each other. No later than by the end of the first academic year, every student has to form an IEP that can be updated within the term established by ITMO University.

3.10 Fundamental and professional training takes into account the student's experience with organizing and participation in events that are not part of the educational program (student competitions, contests, conferences, etc.) that confirms their attainment of the educational results of the program.

3.11 An educational program has to include modules (disciplines) on PE and sports:

- for a total of at least 2 credits as part of the core training (Element 1).
- for a total of at least 328 academic hours as part of elective modules (disciplines) that are mandatory, don't give credits, and are not considered a part of the workload of a Bachelor's program.

The modules (disciplines) in PE and sports are implemented in accordance with the procedures established by ITMO University.

A special procedure is established for students with disabilities, with regard to their health conditions.

3.12 Element 2. Practical training includes industrial practical training and (or) research work and (or) project work and (or) other types of practical training that provide students with authentic career-building experience. Types of practical training are established by the program head.

3.13 Research and project work can be in the format of a research and (or) project seminar by decision of the program head.

3.14 Pre-graduation internship is conducted for the purpose of completing the student's thesis and is mandatory.

3.15 Results attained within the course of an internship or any other practical training can be counted as educational results under the condition that they correspond with the purpose of practical training.

3.16 For people with disabilities, the choice of venue for practical training is made with regard to their health conditions and accessibility requirements.

3.17 Element 3. State Final Examination includes preparation for thesis defense and thesis defense.

3.18 Element 4. Elective modules (disciplines) includes adaptive electives for students with disabilities, and can also include modules (disciplines) from the University's common pool of elective disciplines, a program-specific pool of elective disciplines, adaptive disciplines for the alignment of the level of training (mathematics, physics, foreign language, etc.), minors and other educational products for ensuring the formation of a unique set of graduate's competencies.

3.19 Elective modules (disciplines) are aimed at the formation of fundamental competencies, soft skills, basic professional skills, professional skills.

3.20 Elective modules (disciplines) aren't included into the scope of the educational program.

3.21 ITMO University offers people with disabilities (upon their request) an opportunity to follow an educational program that accounts for the specifics of their psychological and physical development and individual capabilities and, if necessary, supports the treatment of their developmental disabilities and their social integration on the condition they have a corresponding medical certificate.

3.22 The implementation of a part (parts) of an educational program and the State Final Examination that are associated with students getting access to confidential information and (or) use of classified weaponry, military hardware, and their components cannot take place with the use of e-learning and distance learning technologies.

IV. Requirements for implementation of a Bachelor's program

4.1 The requirements for implementation of an educational program include general requirements, requirements for material, technical, and methodological support of a program, requirements for personnel and financial aspects of the implementation of a program, as well as requirements for the methods used for assessing the quality of educational activities and training of students following the educational program.

4.2 General requirements for the implementation of an educational program.

4.2.1 ITMO University manages, on the right of ownership, or other legal grounds, the material and technical support of the conduct of educational activities (spaces and equipment) for the implementation of elements 1 and 3 of educational programs in accordance with the curricula, as well as for the implementation of elements 2 and 3 with the involvement of resources from ITMO's partners in accordance with the rules and regulations in place.

4.2.2 Throughout the whole term of their education, every student must be granted unlimited access to ITMO's digital informational and educational system from any location that has internet access. The conditions for the operation of the digital informational and educational system can be created with the help of a third party.

ITMO University's digital informational and educational system has to provide:

access to curricula, syllabi of disciplines (modules), practical training, State Final Examination, teaching materials in a digital format and digital learning resources specified in the syllabi of disciplines (modules), internships;

formation of a student's digital portfolio, record-keeping of their assignments and the associated grades.

In case a program is implemented with the use of e-learning and remote learning technologies, ITMO University's digital informational and educational system also has to provide:

record-keeping of the course of the educational process, interim assessment results, and the results of mastering the program;

the conduct of study sessions and procedures for assessment of the results of education which were designed to be implemented with the use of e-learning and distance learning technologies;

interaction between the participants of the educational process (synchronous and (or) asynchronous) via the internet.

The operation of the digital informational and educational system is maintained by the corresponding means of infocommunication technologies and the qualification of specialists that use and maintain it. The operation of the digital informational and educational system has to comply with the legislation of the Russian Federation[3].

4.2.3 When implementing the educational program jointly with partner organizations, the requirements for the implementation of the Bachelor's program have to be met by the aggregate of resources of material, technical, and methodological support provided by organizations that participate in the implementation of the program.

4.3 Requirements for material, technical, and methodological support of a program.

4.3.1 The spaces used have to be classrooms suitable for the delivery of study sessions of the Bachelor's program, with the corresponding equipment and technical means, the list of which is established by the syllabi of disciplines (modules).

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[3] Federal Law No. 149-FZ dated July 27, 2006, "On Information, Information Technologies and Protection of Information (Corpus of Legislation of the Russian Federation", 2006, № 31, art. 3448; 2010, № 31, art. 4196; 2011, № 15, art. 2038; № 30, art. 4600; 2012, № 31, art. 4328; 2013, № 14, art. 1658; № 23, art. 2870; № 27, art. 3479; № 52, art. 6961, art. 6963; 2014, № 19, art. 2302; № 30, art. 4223, art. 4243, № 48, art. 6645; 2015, № 1, art. 84; № 27, art. 3979; № 29, art. 4389, art. 4390; 2016, № 26, art. 3877; № 28, art. 4558; № 52, art. 7491; 2017, № 18, art. 2664; № 24, art. 3478; № 25, art. 3596; № 31, art. 4825), Federal Law of 27 July 2006 N 152-FZ "On Personal Data" (Corpus of Legislation of the Russian Federation, 2006, № 31, art. 3451; 2009, № 48, art. 5716; № 52, art. 6439; 2010, № 27, art. 3407; № 31, art. 4173, art. 4196; № 49, art. 6409; 2011, № 23, art. 3263; № 31, art. 4701; 2013, № 14, art. 1651; № 30, art. 4038; № 51, art. 6683; 2014, № 23, art. 2927; № 30, art. 4217, art. 4243; 2016, № 27, art. 4164; 2017, № 9, art. 1276; № 27, art. 3945; № 31, art. 4772).

Spaces for individual study must be equipped with computers, internet access, and access to ITMO University's digital informational and educational system.

Equipment can be replaced by its virtual counterparts.

4.3.2 ITMO University is in possession of an essential set of licensed and freely distributable software, including software developed in Russia (the list of software is established in the syllabi of disciplines (modules) and can be updated when necessary).

4.3.3 If printed materials have to be used in the course of the educational process, the library stock has to have these materials in the amount calculated as follows: no less than 0.25 items of every title specified in the syllabi of disciplines (modules) per one student from among those who simultaneously study the corresponding discipline (module) or participate in a corresponding internship.

4.3.4 Students must have access (remote access), including with the use of e-learning and distance learning technologies, to modern professional databases, the list of which is established in the syllabi of disciplines (modules) and can be updated when necessary.

4.3.5 Students with disabilities must be provided with printed and (or) digital materials in formats adapted to their conditions.

4.4 Requirements for personnel involved in the implementation of a Bachelor's program.

4.4.1 The implementation of a Bachelor's program is carried out by ITMO's academic staff as well as persons involved by ITMO in the implementation of the educational program on other conditions.

4.4.2 The qualification of ITMO's academic staff has to correspond with the requirements specified in the corresponding guides and (or) professional standards (if applicable).

4.4.3 The share of ITMO academic staff participating in the implementation of a program to persons involved by ITMO in the implementation of the educational program on other conditions (calculated based on the number of replaced positions taken as integer numbers) who will conduct research, pedagogical, methodological and (or) practical work that corresponds with the subject area of the associated discipline (module) is established by the requirements of federal state educational standards for higher education.

4.4.4 The share of ITMO academic staff participating in the implementation of a program and persons involved by ITMO in the implementation of the educational program on other conditions (calculated based on the number of replaced positions taken as integer numbers) who must be heads and (or) employees of other organizations that work in the professional field (i.e. have no less than 3 years of experience in this professional field) corresponding with those that graduates aspire to master is established by the requirements of federal state educational standards for higher education for the corresponding program track.

4.4.5 The share of ITMO academic staff participating in the implementation of a program and persons involved by ITMO in the implementation of the educational program on other conditions (calculated based on the number of replaced positions taken as integer numbers) who must have a degree (including a degree received in a different country and recognized in the Russian Federation) is established by the requirements of federal state educational standards for higher education for the corresponding program track.

4.4.6 The general management of an educational program is conducted by a program head chosen from among ITMO's academic staff with an academic degree (including a degree received in a different country and recognized in the Russian Federation) and (or) experience as a senior manager in a field that corresponds with the professional activity that the graduates are training for.

4.4.7 The head of an educational program conducts their own research (creative) projects and (or) R&D projects (participates in such projects) in the field that corresponds to the subject area of the program, has publications based on the results of these activities in the last two years in leading peer-reviewed journals, and (or) presents these results at national and international conferences.

4.5 Requirements for the financial aspect of the implementation of a program.

4.5.1 Financial support for the implementation of a program has to amount to no less than the basic standard costs for the provision of public services for the implementation of educational

programs of higher education, namely Bachelor's programs, and values of adjustment factor for basic cost standards established by the Ministry of Education and Science of the Russian Federation[4].

4.6 Requirements for methods used to assess the quality of educational activities and training of students following the educational program.

4.6.1 The quality of educational activities and training of students following the educational program is assessed by means of an internal assessment system as well as via an external assessment system in which ITMO University and the program participate voluntarily.

4.6.2 With the purpose of confirming the correspondence of educational activities to ITMO ES and the improvement of educational programs, ITMO University involves employers and (or) their associations, as well as other legal and (or) physical entities, including academic staff, students and graduates of ITMO University, in the conduct of regular assessments of the quality of educational activities and students' training in Bachelor's programs (interim and State Final Examinations).

4.6.3 The assessment of the quality of educational programs is conducted in accordance with the principles of collegial assessment, including with the involvement of independent experts.

4.6.4 As part of the internal system for the assessment of the quality of education, students have the opportunity to assess the conditions in which the the educational process takes place, its content, organization, and overall quality, as well as the quality of its modules (disciplines) and practical training, including with the use of tools provided by System 360.

4.6.5 The external assessment of the quality of education of an educational program is conducted as part of the procedures of state certification, as well as professional and public certifications conducted by employers and authorized organizations, including international ones, or authorized national professional and public organizations that are part of international structures.

[4] Paragraph 10 of the Decree of the Government of the Russian Federation № 640 dated June 24, 2015 "On the procedure for the formation of a state order for the provision of public services (performance of work) in regard to federal establishments and financial support of the conduct of a state order" (Corpus of Legislation of the Russian Federation, 2015, № 28, art. 4226; 2016, № 24, art. 3525; № 42, art. 5926; № 46, art. 6468).