

**Federal State Autonomous Educational Institution of Higher Education "Moscow  
Institute of Physics and Technology  
(National Research University)"**

**APPROVED**  
**Vice Rector for Academic Affairs**

**A.A. Voronov**

**Work program of the course (training module)**

**course:** Applied Physical Education (Optional Sports)/Прикладная физическая культура (виды спорта по выбору)  
**major:** Biotechnology  
**specialization:** Biomedical Engineering/Биомедицинская инженерия  
Phystech School of Biological and Medical Physics  
Department of Physical Education and Sport  
**term:** 1  
**qualification:** Bachelor

Semesters, forms of interim assessment:

2 (spring) - Pass/fail exam  
3 (fall) - Pass/fail exam  
4 (spring) - Pass/fail exam  
5 (fall) - Pass/fail exam  
6 (spring) - Pass/fail exam

Academic hours: 300 AH in total, including:

lectures: 0 AH.

seminars: 300 AH.

laboratory practical: 0 AH.

Independent work: 30 AH.

In total: 330 AH, credits in total: 7,33

Authors of the program:

V.B. Gavrilov, head of the department

P.V. Bolgov, senior trainer teacher

The program was discussed at the Department of Physical Education and Sport 04.06.2020

## Annotation

The formation of knowledge, skills and abilities to use the methods and means of physical education to ensure full social and professional activities.

### 1. Study objective

#### Purpose of the course

To form a worldview system of practical knowledge and attitude to physical culture.

#### Tasks of the course

- To form an understanding of the social role of physical culture in the development of personality and its preparation for professional activities;
- to form the knowledge of the scientific, biological and practical foundations of physical education and a healthy lifestyle;
- to form a motivational-value attitude to physical culture, the attitude towards a healthy lifestyle, physical self-improvement and self-education, the need for regular exercise and sports.

### 2. List of the planned results of the course (training module), correlated with the planned results of the mastering the educational program

Mastering the discipline is aimed at the formation of the following competencies:

Code and the name of the competence	Competency indicators
UC-7 Maintain an adequate level of physical fitness to undertake social and professional activities	UC-7.1 Learn the basics of healthy living, health saving technologies, physical education

### 3. List of the planned results of the course (training module)

As a result of studying the course the student should:

know:

Scientific, practical and special foundations necessary for understanding the natural and social processes of the functioning of the physical culture of society and the individual, the ability to adapt and creatively use them for personal and professional development, self-improvement, and organizing a healthy lifestyle when performing educational, professional and sociocultural activities. Understand the role of physical culture in human development and specialist training.

be able to:

Use physical culture and sports activities to enhance their functional and motor capabilities, to achieve personal life and professional goals.

master:

A system of practical skills ensuring the preservation and strengthening of health, the development and improvement of psychophysical abilities and qualities (with the implementation of established standards for general physical and sports-technical training).

### 4. Content of the course (training module), structured by topics (sections), indicating the number of allocated academic hours and types of training sessions

#### 4.1. The sections of the course (training module) and the complexity of the types of training sessions

№	Topic (section) of the course	Types of training sessions, including independent work			
		Lectures	Seminars	Laboratory practical	Independent work
1	General physical preparation		10		
2	Special physical preparation		40		

3	Professional and applied physical preparation		10		
4	Theoretical preparation				6
5	General physical preparation		10		
6	Special physical preparation		40		
7	Professional and applied physical preparation		10		
8	Theoretical preparation				6
9	General physical preparation		10		
10	Special physical preparation		40		
11	Professional and applied physical preparation		10		
12	Theoretical preparation				6
13	General physical preparation		10		
14	Special physical preparation		40		
15	Professional and applied physical preparation		10		
16	Theoretical preparation				6
17	General physical preparation		10		
18	Special physical preparation		40		
19	Professional and applied physical preparation		10		
20	Theoretical preparation				6
AH in total			300		30
Exam preparation		0 AH.			
Total complexity		330 AH., credits in total 7,33			

#### 4.2. Content of the course (training module), structured by topics (sections)

Semester: 2 (Spring)

##### 1. General physical preparation

Education of physical qualities.

##### 2. Special physical preparation

Special physical training

##### 3. Professional and applied physical preparation

Professional and applied physical preparation

##### 4. Theoretical preparation

The material of the section provides for students to master the system of scientific, practical and special knowledge necessary to understand the natural and social processes of the functioning of the physical culture of society and the individual, their adaptive, creative use for personal and professional development, self-improvement, and the organization of a healthy lifestyle when performing educational, professional and socio-cultural activities.

Semester: 3 (Fall)

5. General physical preparation

Education of physical qualities.

6. Special physical preparation

Special physical training

7. Professional and applied physical preparation

Professional and applied physical preparation

8. Theoretical preparation

The material of the section provides for students to master the system of scientific, practical and special knowledge necessary to understand the natural and social processes of the functioning of the physical culture of society and the individual, their adaptive, creative use for personal and professional development, self-improvement, and the organization of a healthy lifestyle when performing educational, professional and socio-cultural activities.

Semester: 4 (Spring)

9. General physical preparation

Education of physical qualities.

10. Special physical preparation

Special physical training

11. Professional and applied physical preparation

Professional and applied physical preparation

12. Theoretical preparation

The material of the section provides for students to master the system of scientific, practical and special knowledge necessary to understand the natural and social processes of the functioning of the physical culture of society and the individual, their adaptive, creative use for personal and professional development, self-improvement, and the organization of a healthy lifestyle when performing educational, professional and socio-cultural activities.

Semester: 5 (Fall)

13. General physical preparation

Education of physical qualities.

14. Special physical preparation

Special physical training

## 15. Professional and applied physical preparation

Professional and applied physical preparation

## 16. Theoretical preparation

The material of the section provides for students to master the system of scientific, practical and special knowledge necessary to understand the natural and social processes of the functioning of the physical culture of society and the individual, their adaptive, creative use for personal and professional development, self-improvement, and the organization of a healthy lifestyle when performing educational, professional and socio-cultural activities.

Semester: 6 (Spring)

## 17. General physical preparation

Education of physical qualities.

## 18. Special physical preparation

Special physical training

## 19. Professional and applied physical preparation

Professional and applied physical preparation

## 20. Theoretical preparation

The material of the section provides for students to master the system of scientific, practical and special knowledge necessary to understand the natural and social processes of the functioning of the physical culture of society and the individual, their adaptive, creative use for personal and professional development, self-improvement, and the organization of a healthy lifestyle when performing educational, professional and socio-cultural activities.

## **5. Description of the material and technical facilities that are necessary for the implementation of the educational process of the course (training module)**

- SK No.1,
- SK No. 2,
- swimming pool,
- stadium,
- tennis court,
- outdoor volleyball court,
- weight training equipment,
- cardio equipment,
- power equipment,
- sports game equipment,
- gym equipment.

## **6. List of the main and additional literature, that is necessary for the course (training module) mastering**

Main literature

- 1 Развитие выносливости у спортсменов Developing Endurance in Athletes. Авторы: Николаев А.А., Семёнов В.Г. ISBN: 9785906839725; 2017 г. Издательство: Спорт
- 2 Физиология человека. Общая. Спортивная. Возрастная: учебник. Изд. 7-е, Human Physiology. General. Sports. Age-related. Textbook. 7th Ed. Авторы: Солодков А. С, Сологуб Е. Б. ISBN: 9785906839862; 2017 г. Издательство: Спорт
- 3 Порядок организации оказания медицинской помощи занимающимся физической культурой и спортом The Order of Organization of Rendering First Aid to Persons Who Practice Physical Culture and Sports. Автор: Министерство здравоохранения Российской Федерации. ISBN: 9785906839770; 2017 г. Издательство: Спорт

#### Additional literature

1. Теоретико-методические аспекты практики спорта. Theoretical and Methodological Aspects of Practical Sports. Авторы: Фискалов В.Д., Черкашин В.П. ISBN: 9785906839213; 2016 г. Издательство: Спорт
2. Подготовка спортсменов XXI века. Научные основы и построение тренировки. Пер. с англ. Athletes Training in the XXI Century. Scientific Basis and Training Structure. Автор: Иссурин В.Б. ISBN: 9785906839572; 2016 г. Издательство: Спорт

#### 7. List of web resources that are necessary for the course (training module) mastering

<http://www.olympic.org/>  
<http://www.paralympic.org/>  
[http://www.olympic.org/uk/organisation/noc/index\\_uk.asp?id\\_assoc=8](http://www.olympic.org/uk/organisation/noc/index_uk.asp?id_assoc=8)

#### 8. List of information technologies used for implementation of the educational process, including a list of software and information reference systems (if necessary)

International Olympic Committee <http://www.olympic.org/>  
 International Paralympic Committee <http://www.paralympic.org/>  
 International Olympic Committees  
[http://www.olympic.org/uk/organisation/noc/index\\_uk.asp?id\\_assoc=8](http://www.olympic.org/uk/organisation/noc/index_uk.asp?id_assoc=8)  
 National sports organizations. The national sports organizations of countries of all continents (Asia, America, Africa, Europe, Oceania), their relations with government and key administrative organizations in each country are represented. <http://www.ucalgary.ca/library/ssportsite/natorg.html>

International Sports Federations [http://olympic.org/uk/organisation/if/index\\_uk.asp](http://olympic.org/uk/organisation/if/index_uk.asp)  
 International Sports Information Association <http://www.iasi.org/>  
 National Information Network "Sports Russia". The site contains information about the structure of the industry, about organizations and institutions related to sports, about Russian athletes and specialists, a catalog of sports resources is provided, and there are links to sports-oriented websites  
<http://www.infosport.ru/>  
 Russian Olympic Committee <http://www.olympic.ru/>  
 South African Sports Committee <http://www.sasc.org.za/>  
 Australia Sports Portal <http://www.ausport.gov.au/>  
 France Sports Portal <http://lib.sportedu.by/internet/www.sports.fr>  
 French Olympic Committee <http://www.comite-olympique.asso.fr/>  
 Sports Judges Association <http://www.footballreferee.org/index.asp>  
 Sports Directory at Google <http://www.google.com/Top/Sports/>  
 Sports Directory at Lycos <http://dir.lycos.com/Sports/>  
 Sports Directory at the Outdoors <http://www.searchtheoutdoors.com/>  
 Sports Directory at Yahoo <http://dir.yahoo.com/recreation/sports/index.html>  
 Sport Information centres

"ALTIS" <http://www.altis.ac.uk> is created by a team of information specialists from the University of Birmingham UK. Provides students, teachers, researchers and practitioners with access to high-quality information in the field of sports, tourism and leisure. Access to full-text information is possible. World Anti-Doping Agency <http://www.wada-ama.org/en/dynamic.ch2>

National Information Network "Sports Russia". The site contains information about the structure of the industry, about organizations and institutions related to sports, about Russian athletes and specialists, a catalog of sports resources is provided, and there are links to sports-oriented websites.  
<http://www.infosport.ru/xml/t/default.xml>

Australia National Sports Information Center <http://www.ausport.gov.au/nsic/>

Olympic Information Center [http://www.aafla.org/6oic/review\\_frmst.htm](http://www.aafla.org/6oic/review_frmst.htm)

Links to sports information centers [http://www.aafla.org/4sl/links\\_frmst.htm](http://www.aafla.org/4sl/links_frmst.htm)

SPORTQuest is a sports and informational user service provided by SIRC via the Internet.

SPORTQuest is an excellent reference to sports science information sources.

[http://www.sirc.ca/online\\_resources/sportquest.cfm](http://www.sirc.ca/online_resources/sportquest.cfm)

Sports Information Resource Center (SIRC) - identifies, collects, creates and distributes information on sports, fitness and related industries. SIRC is the creator of several sports and scientific information products <http://www.sirc.ca/>

The Los Angeles Amateur Sports Foundation (AAFLA) is a research and training center whose goal is the development of sports science and education. The foundation has the largest scientific library in North America (Paul Ziffren Sports Resource Center). <http://www.aafla.org/>

Sports Information Resources

European sports structures <http://www.eyes-2004.info/147.0.html>

European football <http://www.euro-football.ru/>

Canadian Sports Information Website <http://www.ucalgary.ca/lib-old/ssportsite/liblist.html>

Sports Internet Directory <http://www.sportfiles.ru/sf/catalog.asp?razd=21>

EU Classification Sports Site [http://www.europa.eu.int/comm/sport/index\\_en.html](http://www.europa.eu.int/comm/sport/index_en.html)

Research Institute of Physical Culture, St. Petersburg <http://www.genoterra.ru/news/view/11/517>

Sports Media <http://www.infosport.ru/xml/t/bank.xml?nic=spec>

Virtual library of sports information; a collection of sports links <http://sportsvl.com/>

Information centers, libraries, research institutes and other organizations (addresses, phone numbers, faxes, e-mails and Internet addresses of more than 60 organizations related to sports information)  
<http://www.directory-iasi.org/>

German Central Scientific Sports Library. Search in the electronic catalog is available  
<http://zb-sport.dshs-koeln.de/>

## 9. Guidelines for students to master the course

The material of the section is provided to students to master the system of scientific, practical and special knowledge necessary for understanding the natural and social processes of the functioning of the physical culture of society and the individual, the ability to adapt and creatively use them for personal and professional development, self-improvement, and organizing a healthy lifestyle when performing educational, professional and socio-cultural activities.

**Assessment funds for course (training module)**

**major:** Biotechnology  
**specialization:** Biomedical Engineering/Биомедицинская инженерия  
Phystech School of Biological and Medical Physics  
Department of Physical Education and Sport  
**term:** 1  
**qualification:** Bachelor

Semesters, forms of interim assessment:

2 (spring) - Pass/fail exam  
3 (fall) - Pass/fail exam  
4 (spring) - Pass/fail exam  
5 (fall) - Pass/fail exam  
6 (spring) - Pass/fail exam

**Authors:**

V.B. Gavrilov, head of the department  
P.V. Bolgov, senior trainer teacher

## 1. Competencies formed during the process of studying the course

Code and the name of the competence	Competency indicators
UC-7 Maintain an adequate level of physical fitness to undertake social and professional activities	UC-7.1 Learn the basics of healthy living, health saving technologies, physical education

## 2. Competency assessment indicators

As a result of studying the course the student should:

### know:

Scientific, practical and special foundations necessary for understanding the natural and social processes of the functioning of the physical culture of society and the individual, the ability to adapt and creatively use them for personal and professional development, self-improvement, and organizing a healthy lifestyle when performing educational, professional and sociocultural activities. Understand the role of physical culture in human development and specialist training.

### be able to:

Use physical culture and sports activities to enhance their functional and motor capabilities, to achieve personal life and professional goals.

### master:

A system of practical skills ensuring the preservation and strengthening of health, the development and improvement of psychophysical abilities and qualities (with the implementation of established standards for general physical and sports-technical training).

## 3. List of typical control tasks used to evaluate knowledge and skills

Not provided.

## 4. Evaluation criteria

List of the themes for the reports:

2 semester

- 1.Morning hygienic gymnastics and its significance. The complex of morning hygienic gymnastics.
- 2.Physical culture in the system of cultural values.
- 3.Students healthy lifestyle.
- 4.Symbols and attributes of the Olympic Games.
- 5.Motion mode and its meaning.

3 semester

- 1.Physical education and sport as social phenomena.
- 2.The history of the Olympic Games origin and evolution.
- 3.The role of calisthenics in physical education.
- 4.Volleyball. The history of the game origin and evolution. Rules of the game.
- 5.Basketball. The history of the game origin and evolution. Rules of the game.

4 semester

- 1.Forms of independent exercise.
- 2.Physical education in the University.
- 3.Recreation physical education and its forms. The effect of recreation physical education on the body.
4. Athletic gymnastics and its effect on the body.
5. Running as a health improving method.

5 semester

1. Scientific organization of labor: fatigue, mode, physical inactivity, working capacity, physical activity, self-education.
2. Hygienic and natural factors of nature: mode of work and rest; biological rhythms and sleep; science of body weight and human nutrition.
3. The formation of motor skills.
4. Education of the basic physical qualities of a person (definition of a concept, methods of education of quality).
5. Control, self-control in physical education and sports. Prevention of injuries.

6 semester

1. Basics of sport training.
2. Physical education in general cultural and professional preparation of the student.
3. An organism as a self-developing and self-regulating biological system.
4. Anatomical and morphological features and basic physiological functions of the body.

1. The student is obliged to attend classes on physical education and applied physical education according to the curriculum with a delay of no more than 15 minutes. In case of failure to appear or be more than 15 minutes late, the student is given a pass without a good reason. One lesson is equal to one point.

2. The student has the right to participate in sports competitions held within the framework of MIPT. For one day of participation in competitions, one point is awarded. The trainer-teacher has the right to refuse a student to participate in the competition due to the low level of preparedness of the student.

3. The student has the right at the end of each semester to pass control standards for the chosen specialization, three in each semester. Each standard is evaluated in points from 1 to 3. A list of standards for each specialization is attached.

4. The student has the right to participate in sports events held within the framework of the MIPT, as a judge, assistant, etc. For one day of participation in sports events, one point is awarded. The trainer-teacher has the right to refuse a student to participate in sporting events due to the low level of preparedness of the student.

5. Due to the inability of the student for health reasons to attend practical classes in physical education and applied physical education, a theoretical test is assigned. The student must prepare four theoretical tasks with a volume of at least seven A4 sheets with a title page, a list of references and the used Internet resource. For each theoretical task seven points are assigned. The list of topics in the attached file.

## **5. Methodological materials defining the procedures for the assessment of knowledge, skills, abilities and/or experience**

The provisions on the current monitoring of academic performance and intermediate certification in "Physical Education" and "Applied Physical Education" subjects are in the attached file.