

Документ подписан простой электронной подписью
Информация о владельце:
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Должность: Ректор
Дата подписания: 27.06.2025 10:17:50
Уникальный программный ключ:
ca953a0120d891083f939673078ef1a989dae18a

**Federal State Autonomous Educational Institution of Higher Education
"Peoples' Friendship University of Russia named after Patrice Lumumba"**

Academy of Engineering

(name of the main educational unit (MEU) that developed the educational program of higher education)

WORKING PROGRAM OF THE DISCIPLINE

APPLIED STATISTICS

(name of discipline/module)

Recommended for the field of study/specialty:

27.04.04 CONTROL IN TECHNICAL SYSTEMS

(code and name of the training area/specialty)

The discipline is mastered within the framework of the implementation of the main professional educational program of higher education (EP HE):

ARTIFICIAL INTELLIGENCE, MACHINE LEARNING AND SPACE SCIENCES

(name (profile/specialization) of the educational institution of higher education)

1. THE GOAL OF MASTERING THE DISCIPLINE

The discipline "Applied Statistics" is part of the master's program "Artificial Intelligence, Machine Learning and Space Sciences" in the direction 27.04.04 "Control in Technical Systems" and is studied in the 1st semester of the 1st year. The discipline is implemented by the Department of the Partner University. The discipline consists of 4 sections and 18 topics and is aimed at studying the fundamental principles of force, equilibrium, centre of gravity and friction, simple lifting machine; analysis of the main methods for solving typical problems and familiarization with the area of their application in professional activities.

The purpose of mastering the discipline is to develop fundamental knowledge and skills in applying problem solving methods necessary for professional activities, and to improve the overall level of students' literacy in the discipline Applied Mechanics and Engineering. The students will learn how to apply mechanics principles and theories into advanced research and development applications.

2. REQUIREMENTS TO THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the discipline "Applied Statistics" is aimed at developing the following competencies (parts of competencies) in students:

Table 2.1. List of competencies developed in students while mastering the discipline (results of mastering the discipline)

Cipher	Competence	Indicators of Competence Achievement (within the framework of this discipline)
GPC-1	Able to analyze and identify the natural scientific essence of control problems in technical systems based on provisions, laws and methods in the field of natural sciences and mathematics	GPC-1.1 Knows the basic laws, provisions and methods in the field of natural sciences and mathematics; GPC-1.2 Able to identify the natural scientific essence of control problems in technical systems, guided by the laws and methods of natural sciences and mathematics; GPC-1.3 Has knowledge of tools for analyzing control problems in technical systems;
GPC-2	Able to formulate control problems in technical systems and justify methods for solving them	GPC-2.1 Knows the basic methods of solving control problems in technical systems; GPC-2.2 Able to justify methods for solving control problems in technical systems; GPC-2.3 Proficient in methods of setting control tasks in technical systems;
GPC-3	Capable of independently solving control problems in technical systems based on the latest achievements of science and technology	GPC-3.1 Knows the basic approaches to solving control problems in technical systems; GPC-3.2 Able to apply basic approaches based on the latest achievements of science and technology to solving control problems in technical systems; GPC-3.3 Has mastered methods for solving control problems in technical systems based on the latest achievements of science and technology;

3. PLACE OF THE DISCIPLINE IN THE STRUCTURE OF THE EDUCATIONAL EDUCATION

Discipline "Applied Statistics" refers to the mandatory part of block 1 "Disciplines (modules)" of the educational program of higher education.

As part of the higher education program, students also master other disciplines and/or practices that contribute to the achievement of the planned results of mastering the discipline "Applied Statistics".

Table 3.1. List of components of the educational program of higher education that contribute to the achievement of the planned results of mastering the discipline

Cipher	Name of competence	Previous courses/modules, practices*	Subsequent disciplines/modules, practices*
GPC-1	Able to analyze and identify the natural scientific essence of control problems in technical systems based on provisions, laws and methods in the field of natural sciences and mathematics		Undergraduate practice / Pre-graduation practice; Geoinformation Systems and Applications;
GPC-2	Able to formulate control problems in technical systems and justify methods for solving them		Undergraduate practice / Pre-graduation practice;
GPC-3	Capable of independently solving control problems in technical systems based on the latest achievements of science and technology		Undergraduate practice / Pre-graduation practice; Research work / Research work (acquiring primary skills in research work); Advanced Methods of Space Flight Mechanics;

* - filled in in accordance with the competency matrix and the SUP EP HE

** - elective disciplines/practices

4. SCOPE OF THE DISCIPLINE AND TYPES OF STUDY WORK

The total workload of the discipline “Applied Statistics” is “5” credit units.

Table 4.1. Types of educational work by periods of mastering the educational program of higher education for full-time education.

Type of academic work	TOTAL,ac.h.		Semester(s)
			1
<i>Contact work, academic hours</i>	34		34
Lectures (LC)	17		17
Laboratory work (LW)	0		0
Practical/seminar classes (SC)	17		17
<i>Independent work of students, academic hours</i>	110		110
<i>Control (exam/test with assessment), academic hours</i>	36		36
General complexity of the discipline	ac.h.	180	180
	credit.ed.	5	5

The total workload of the discipline “Applied Statistics” is “5” credit units.

Table 4.2. Types of educational work by periods of mastering the educational program of higher education for full-time education.

Type of academic work	TOTAL,ac.h.		Semester(s)
			1
<i>Contact work, academic hours</i>	34		34
Lectures (LC)	17		17
Laboratory work (LW)	0		0
Practical/seminar classes (SC)	17		17
<i>Independent work of students, academic hours</i>	110		110
<i>Control (exam/test with assessment), academic hours</i>	36		36
General complexity of the discipline	ac.h.	180	180
	credit.ed.	5	5

5. CONTENT OF THE DISCIPLINE

Table 5.1. Contents of the discipline (module) by types of academic work

Section number	Name of the discipline section	Section Contents (Topics)		Type of academic work*
Section 1	Force	1.1	Fundamentals	LC, SC
		1.2	Force	LC, SC
		1.3	Resolution of a force	LC, SC
		1.4	Moment of force	LC, SC
		1.5	Force system	LC, SC
		1.6	Composition of Forces	LC, SC
Section 2	Equilibrium	2.1	Definition, conditions of equilibrium	LC, SC
		2.2	Lami's Theorem	LC, SC
		2.3	Equilibrant	LC, SC
		2.4	Beams	LC, SC
Section 3	Center of Gravity and Friction	3.1	Centroid	LC, SC
		3.2	Center of gravity	LC, SC
		3.3	Definition of friction, force of friction	LC, SC
		3.4	Equilibrium of bodies on level plane	LC, SC
		3.5	Equilibrium of bodies on inclined plane	LC, SC
Section 4	Simple Lifting Machine	4.1	Definitions of simple machine	LC, SC
		4.2	Law of machine, maximum mechanical advantage	LC, SC
		4.3	Study of simple machines	LC, SC

* - filled in only for FULL-TIME education: LC – lectures; LW – laboratory work; SC – practical/seminar classes.

6. LOGISTIC AND TECHNICAL SUPPORT OF DISCIPLINE

Table 6.1. Material and technical support of the discipline

Audience type	Equipping the auditorium	Specialized educational/laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means for multimedia presentations.	
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and midterm assessment, equipped with a set of specialized furniture and technical means for multimedia presentations.	
For independent work	A classroom for independent work of students (can be used for conducting seminars and consultations), equipped with a set of specialized furniture and computers with access to the Electronic Information System.	

* - the audience for independent work of students MUST be indicated!

7. EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

Main literature:

1. "Vector Mechanics for Engineers: Statics and Dynamics," by Beer, Johnston, and Eisenberg, McGraw-Hill, 10th Edition.
2. "Materials Science and Engineering", William D. Callister Jr. and David G. Rethwisch, 9th ed., SI Version, John Wiley & Sons, 2014
3. "Shigley's Mechanical Engineering Design", Richard G Budynas and Keith J Nisbett, 10th ed., McGraw-Hill Higher Education, 2014

Further reading:

1. "Elasticity", James R. Barber, 3rd ed., Dordrecht: Springer Netherlands, 2010. On-line version available through CityU library.
2. "Mechanics of materials," Barry J. Goodno and James M. Gere, 9th ed., SI Version, Cengage Learning, 2018.

Resources of the information and telecommunications network "Internet":

1. RUDN University EBS and third-party EBSs to which university students have access on the basis of concluded agreements
 - Electronic library system of RUDN - ELS RUDN
<https://mega.rudn.ru/MegaPro/Web>
 - Electronic library system "University library online"<http://www.biblioclub.ru>
 - EBS Yuraith<http://www.biblio-online.ru>
 - Electronic Library System "Student Consultant" www.studentlibrary.ru
 - EBS "Znanium"<https://znanium.ru/>
2. Databases and search engines
 - Sage <https://journals.sagepub.com/>
 - Springer Nature Link <https://link.springer.com/>
 - Wiley Journal Database <https://onlinelibrary.wiley.com/>
 - Scientometric database Lens.org <https://www.lens.org>

Educational and methodological materials for independent work of students in mastering a discipline/module:*

1. Lecture course on the subject "Applied Statistics".

* - all educational and methodological materials for independent work of students are posted in accordance with the current procedure on the discipline page in TUIS!

DEVELOPER:

Associate Professor		Saltykova Olga Alexandrovna
<i>Position, Department</i>	<i>Signature</i>	<i>Surname I.O.</i>

**HEAD OF THE
DEPARTMENT:**

<i>Position of the Department</i>	<i>Signature</i>	<i>Surname I.O.</i>

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