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**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

FUNDAMENTALS OF PROJECT ACTIVITIES

(name of discipline/module)

Recommended for the field of study/specialty:

27.03.04 CONTROL IN TECHNICAL SYSTEMS

(code and name of the field of study/specialty)

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

DATA SCIENCE AND SPACE SYSTEMS

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

1. THE GOAL OF MASTERING THE DISCIPLINE

The course "Fundamentals of Project Activities" is part of the "Data Science and Space Systems" bachelor's program, major 27.03.04 "Control in Technical Systems," and is studied in the third semester of the second year. The course is offered by the Department of Mechanics and Control Processes. It consists of three sections and eight topics and focuses on the theoretical and practical foundations of project management, including project management methods and tools, the project lifecycle, project team formation principles, and project performance evaluation methods.

The purpose of mastering the discipline is Developing students' research competence through mastering scientific methods and skills in educational, research, and project activities. The main objectives of mastering the discipline are as follows: - To teach independent achievement of the intended goal. - To develop the ability to work with information. - To develop research skills. - To master methods of presenting the obtained results. - To develop teamwork skills.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the course "Fundamentals of Project Activities" 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 Competency Achievement (within this discipline)
UC-2	Able to define a range of tasks within the framework of a given goal and select optimal ways to solve them, based on current legal regulations, available resources and limitations	UC-2.1 Formulates a problem, the solution of which is directly related to the achievement of the project goal; UC-2.2 Defines the connections between the assigned tasks and the expected results of their solution; UC-2.3 Within the framework of the assigned tasks, it determines the available resources and limitations, current legal norms; UC-2.4 Analyzes the project implementation schedule as a whole and selects the optimal way to solve the assigned tasks, based on current legal regulations and available resources and constraints; UC-2.5 Monitors the progress of the project, adjusts the schedule in accordance with the monitoring results;
UC-3	Able to interact socially and fulfill his/her role in a team	UC-3.1 Defines his role in the team based on the strategy of cooperation to achieve the set goal; UC-3.2 Formulates and takes into account in its activities the behavioral characteristics of groups of people, identified depending on the set goal; UC-3.3 Analyzes the possible consequences of personal actions and plans their actions to achieve a given result; UC-3.4 Exchanges information, knowledge and experience with team members; UC-3.5 Argues his point of view regarding the use of ideas of other team members to achieve the set goal; UC-3.6 Participates in teamwork to carry out assignments;
UC-6	Able to manage one's time, build and implement a trajectory of self-development based on the principles of lifelong learning	UC-6.1 Controls the amount of time spent on specific activities; UC-6.2 Develops tools and methods for time management when completing specific tasks, projects, and goals; UC-6.3 Analyzes one's resources and their limits (personal, situational, temporary, etc.) for the successful completion of the assigned task; UC-6.4 Finds and uses sources of additional information to improve the level of general and professional knowledge; UC-6.5 Analyzes the main opportunities and tools of continuous education in relation to one's own interests and needs, taking into

Cipher	Competence	Indicators of Competency Achievement (within this discipline)
		account conditions, resources, personal capabilities, stages of career growth, time perspective for the development of activities and the requirements of the labor market; UC-6.6 Defines the tasks of self-development, goals and priorities of professional growth; UC-6.7 Distributes tasks into long-, medium- and short-term ones with justification of their relevance and analysis of resources for their implementation;

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

Course "Fundamentals of Project Activities" 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 "Fundamentals of Project Activities."

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, practical training*	Subsequent disciplines/modules, practices*
UC-3	Able to interact socially and fulfill his/her role in a team		Research work / Scientific research work; Technological Training; Undergraduate Training; Psychology and Pedagogy;
UC-2	Able to define a range of tasks within the framework of a given goal and select optimal ways to solve them, based on current legal regulations, available resources and limitations		Jurisprudence; Research work / Scientific research work; Technological Training; Undergraduate Training;
UC-6	Able to manage one's time, build and implement a trajectory of self-development based on the principles of lifelong learning	History of Russia; Introduction to the Specialty; Physical Education;	Research work / Scientific research work; Technological Training; Undergraduate Training; Physical Education; Psychology and Pedagogy; Philosophers; Fundamentals of Artificial Intelligence;

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

** - elective courses/practices

4. SCOPE OF THE DISCIPLINE AND TYPES OF EDUCATIONAL WORK

The total workload of the “Fundamentals of Project Activities” course is 2 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,academic hours		Semester(s)
			3
<i>Contact work, academic hours</i>	36		36
Lectures (LC)	18		18
Laboratory work (LW)	0		0
Practical/seminar classes (SC)	18		18
<i>Independent work of students, academic hours</i>	36		36
<i>Control (exam/test with assessment), academic hours</i>	0		0
Total complexity of the discipline	academic hours	72	72
	credit	2	2

The total workload of the “Fundamentals of Project Activities” course is 2 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,academic hours		Semester(s)
			3
<i>Contact work, academic hours</i>	36		36
Lectures (LC)	18		18
Laboratory work (LW)	0		0
Practical/seminar classes (SC)	18		18
<i>Independent work of students, academic hours</i>	36		36
<i>Control (exam/test with assessment), academic hours</i>	0		0
Total complexity of the discipline	academic hours	72	72
	credit	2	2

The total workload of the “Fundamentals of Project Activities” course is 2 credit units.

Table 4.3. Types of educational work by periods of mastering the educational program of higher education for full-time education.

Type of academic work	TOTAL,academic hours		Semester(s)
			3
<i>Contact work, academic hours</i>	36		36
Lectures (LC)	18		18
Laboratory work (LW)	0		0
Practical/seminar classes (SC)	18		18
<i>Independent work of students, academic hours</i>	36		36
<i>Control (exam/test with assessment), academic hours</i>	0		0
Total complexity of the discipline	academic hours	72	72
	credit	2	2

5. CONTENT OF THE DISCIPLINE

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

Section number	Name of the discipline section	Topic Title		Topic Contents	Type of academic work*
Section 1	Fundamentals of project activities	1.1	Key concepts of project activities: The concept of project activities; the difference between a project and operational activities; key participants in project activities; basic terms and definitions; the role of project activities in the modern world	A project is defined as a temporary undertaking aimed at creating a unique product or service. Key project characteristics include: time constraints, unique results, sequential development, and resource constraints. Operational activities are defined as repetitive processes to maintain the existing state. Projects and operational activities are compared in terms of duration, repeatability, and uncertainty. Key project participants are defined: initiator, client, project manager, team, sponsor, and end users. Basic terms include: phase, milestone, budget, deadlines, content, quality, constraints, assumptions, and risks. The role of project activities in the modern world as a tool for implementing innovation and strategic development.	LC, SC
		1.2	History of project activities: The evolution of project management; historical examples of successful projects; the development of project management methodologies; key milestones in the development of project management; modern trends in project activities	A description of the evolution of project management from intuitive methods to formalized systems. Characteristics of historical examples of successful projects: the construction of the Egyptian pyramids, the Great Wall of China, the Trans-Siberian Railway, the Manhattan Project, and the Apollo program. Stages in the development of project management methodologies: Gantt charts in the early 20th century, the critical path method and PERT in the 1950s, the work breakdown structure in the 1970s, the PMBOK and PRINCE2 standards in the late 20th century, and the flexible methodologies Agile and Scrum in the 21st century.	LC, SC
		1.3	Principles and structure of the project: Basic principles of project activities; project life cycle; project structure: components and interrelations; project goals and objectives; project success criteria	Defining the key principles of project activities: purposefulness, systematicity, comprehensiveness, effectiveness, adaptability, and balancing constraints. Characterizing the project life cycle as a sequence of phases from conception to completion. A typical life cycle structure: initiation, planning, execution, monitoring and control, and closure. Description of the project structure: external components in the form of goals, objectives, constraints, and assumptions, as well as internal components in the form of deliverables, activities, resources, and risks. Defining the goal as a desired measurable result. Defining tasks as specific steps toward achieving the goal, specifying deadlines and responsibilities. In-	LC, SC

Section number	Name of the discipline section	Topic Title		Topic Contents	Type of academic work*
				terconnecting project components through the principle of the triple constraint of deadlines, budget, content, and quality.	
Section 2	Development and implementation of the project	2.1	Methodology of project activities: Types of project documentation; project planning methods; risk management tools; decision-making techniques; performance evaluation methods; document flow in project activities	Description of project documentation types: project charter, project management plan, schedule, budget, risk register, and reporting. Description of project planning methods: Gantt chart, network planning, critical path method, work breakdown structure. Description of risk management tools: identification, qualitative and quantitative analysis, response planning, and risk monitoring. Description of decision-making techniques: benefit-cost analysis, brainstorming, decision tree, priority matrix.	LC, SC
		2.2	Project Management: Project management processes; resource management; quality management; risk management; stakeholder management; project communications; change management	Project management processes defined: initiation, planning, execution, monitoring and control, and closure. Resource management characteristics: allocation of human, material, and financial resources among tasks, load balancing, and utilization optimization. Quality management: quality planning, quality assurance, and quality control. Risk management as a continuous process of identifying and mitigating threats. Stakeholder management: stakeholder identification, impact assessment, and communication strategy development.	LC, SC
Section 3	Design and presentation of the project	3.1	Visualization in the project: Technical drawings; 3D modeling; prototyping; presentation materials	Characteristics of technical drawings as a means of precisely describing an object geometrically. Description of 3D modeling for creating 3D virtual prototypes. Definition of prototyping as the process of creating a physical or digital model for testing solutions. Description of presentation materials: diagrams, charts, infographics, posters, and mockups for demonstrating project results.	LC, SC
		3.2	Infographics in engineering: Technical diagramming; data visualization; flowcharts and flowcharts; infographics for technical documentation	Characteristics of creating technical diagrams to display structures and processes: algorithm flowcharts, system block diagrams, electrical schematic diagrams. Description of data visualization as a method of presenting numerical information in the form of graphs, histograms, scatter plots, and heat maps. Characteristics of diagrams and flowcharts for documenting the operating logic of technical devices. Description of information preparation for technical documentation: requirements for accuracy, clarity, and standardization.	LC, SC
		3.3	Presentation and defense of projects: Preparation of project documentation; creation	Description of the preparation of project documentation as the formation of a complete package of materials: explanatory notes,	LC, SC

Section number	Name of the discipline section	Topic Title		Topic Contents	Type of academic work*
			of a project presentation; public speaking techniques; answers to questions during the project defense; project evaluation criteria; practical recommendations for the defense	calculations, drawings, specifications. Characteristics of creating a project presentation: structure of the introduction, main body, results, and conclusions, requirements for visual presentation and the distribution of information on slides. Description of public speaking techniques: voice and gesture control, maintaining rapport with the audience, use of pauses and emphasis. Characteristics of answering questions during a project defense: argumentation techniques, handling objections, rephrase techniques, recognizing the limits of one's own competence.	

* - to be completed 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 for the discipline

Audience type	Equipment of the auditorium	Specialized educational/laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	A lecture hall equipped with specialized furniture, a whiteboard (screen), and multimedia presentation equipment.	
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 student work (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the Electronic Information System.	

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

7. EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

Main literature:

1. Velikanova, S. S. Fundamentals of project activities: a lecture course: a tutorial: [12+] / S. S. Velikanova. - Moscow: Direct-Media, 2022. - 316 p.: ill., diagrams, tables. - Access mode: by subscription. - URL: <https://biblioclub.ru/index.php?page=book&id=693220> - Bibliography in the book. - ISBN 978-5-4499-3272-3. - DOI 10.23681/693220. - Text: electronic.

2. Polovinkin, A. I. Fundamentals of Engineering Creativity: a tutorial / A. I. Polovinkin. - 7th ed., reprinted. - St. Petersburg: Lan, 2019. - 364 p. - ISBN 978-5-8114-4603-2. - Text: electronic // Lan: electronic library system. - URL: <https://e.lanbook.com/book/123469> - Access mode: for authorized users.

3. Project management: textbook / edited by S.A. Polevoy. - Moscow: INFRA-M, 2024. - 575 p. - (Higher education). - DOI 10.12737/2016339. - ISBN 978-5-16-018508-8. - Text: electronic. - URL: <https://znanium.ru/catalog/product/2016339> - Access mode: by subscription.

Further reading:

1. Plenkin, A. P. Organization of project activities: a tutorial / A. P. Plenkin, M. G. Shulika, V. D. Mikhailova; Southern Federal University. - Rostov-on-Don: Publishing house of Southern Federal University, 2024. - 167 p. - ISBN 978-5-9275-4524-7. - Text: electronic. - URL: <https://znanium.ru/catalog/product/2146715> - Access mode: by subscription.

2. Zemskov, Yu. P. Fundamentals of project activities: a tutorial / Yu. P. Zemskov, E. V. Asmolova. - 2nd ed., reprinted. - St. Petersburg: Lan, 2020. - 184 p. - ISBN 978-5-8114-4395-6. - Text: electronic // Lan: electronic library system. - URL: <https://e.lanbook.com/book/130487> - Access mode: for authorized users.

3. Potasheva, G. A. Project management (project management): a tutorial / G. A. Potasheva. - Moscow: INFRA-M, 2024. - 224 p. + Additional materials [Electronic resource]. -

(Higher education). - DOI 10.12737/17508. - ISBN 978-5-16-019053-2. - Text: electronic. - URL: <https://znanium.com/catalog/product/2084497> - Access mode: by subscription.

4. Project management: textbook / G.D. Antonov, O.P. Ivanova, V.M. Tumin, Yu.V. Daneykin, P.A. Kostromin. - Moscow: INFRA-M, 2023. - 294 p. - (Higher education: Bachelor's degree). - DOI 10.12737/1864377. - ISBN 978-5-16-017640-6. - Text: electronic. - URL: <https://znanium.ru/catalog/product/1910633> – Access mode: by subscription.

5. Khamidulin, V. S. Fundamentals of project activities: an extended course: a textbook for universities / V. S. Khamidulin. - 2nd ed., reprinted. - St. Petersburg: Lan, 2024. - 240 p. - ISBN 978-5-507-50052-9. - Text: electronic // Lan: electronic library system. - URL: <https://e.lanbook.com/book/409478> - Access mode: for authorized users.

Resources of the information and telecommunications network "Internet":

1. RUDN University Electronic Library System and third-party electronic library systems to which university students have access based on concluded agreements

- RUDN University Electronic Library System – RUDN University Electronic Library System <https://mega.rudn.ru/MegaPro/Web>
- Electronic Library System "University Library Online" <http://www.biblioclub.ru>
- EBS "Urayt" <http://www.biblio-online.ru>
- Electronic Library System "Student Consultant" www.studentlibrary.ru
- EBS "Knowledge" <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 "Fundamentals of project activities".

* - all teaching 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

Position, DEPARTMENT

Signature

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Alexandrovna

Surname I.O.

HEAD OF THE DEPARTMENT:

Head of Department

Position of the DEPARTMENT

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