

*Federal State Autonomous Educational Institution of
Higher Education
"Peoples' Friendship University of Russia"*

Academy of Engineering

WORKING PROGRAM OF THE PRACTICE

Type of practice: Manufacturing practice

Type (name) of the practice: Pedagogical practice

Direction of preparation: 01.06.01 Mathematics and Mechanics

Scientific specialty: Dynamics, Ballistics, Control of Motion of Aircraft and Spacecraft
(Technical Sciences)

Moscow,
2021

1. The purpose and objectives of the practice

Pedagogical practice is an industrial practice and is aimed at the formation and development of postgraduate students' competencies in accordance with the level of education and professional standard; the development of teaching skills, planning, organizing and conducting the educational process in higher educational institutions; the acquisition of skills to work in a scientific and pedagogical team.

Main objectives of Pedagogical practices are:

- to study methods and methodology of teaching and upbringing in higher education;
- learn how to hold classes in technical disciplines;
- master the primary skills of modeling classes, drawing up programs and projects, planning individual classes and developing a special course, choosing an effective organizational strategy.

2. The place of practice in the structure of OPOP VO

Pedagogical practice belongs to the variable part of Block 2 of the curriculum. Its completion is based on the material of previous disciplines and/or practices, and it is also the basis for the study of subsequent disciplines and/or practices of the curriculum, the list of which is presented in table 1.

Table 1 - List of previous and subsequent disciplines/practices

№ i/o	Cipher and name of competence	Previous disciplines/practices	Subsequent disciplines
Universal competencies			
General professional competencies			
1	readiness for teaching in the basic educational programs of higher education (GPC-2)	Fundamentals of Teaching Methods of Development of Engineering Applications Based on Mathematical Modeling Using Computer Science and Computer Technology in high school	Dynamics, Ballistics, Control of Motion of Aircraft and Spacecraft
Professional competencies (type of professional activity _____)			
2	readiness to teach training courses, disciplines (modules), conduct certain types of training sessions in Russian and foreign languages for higher education programs (PC-7)	Fundamentals of Teaching Methods of Development of Engineering Applications Based on Mathematical Modeling Using Computer Science and Computer Technology in high school	State final certification
3	the ability to organize educational, research	Fundamentals of Teaching Methods of Development of	State final certification

and project activities of students in higher education programs (PC-8)	Engineering Applications Based on Mathematical Modeling Using Computer Science and Computer Technology in high school	
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3. Methods of conducting the practice

The methods of conducting Pedagogical practice are as follows:

- stationary.

4. The scope of practice and types of educational work

Table 2 - The volume of practice and types of educational work

Type of educational work		Total, ak. hours	Semester			
			4	5	6	7
Contact work of the student with the teacher, including monitoring		92	26	22	22	22
Other forms of educational work, including keeping a practice diary and preparing a report to students		448	190	86	86	86
Type of certification test			Credit with an assessment	Credit with an assessment	Credit with an assessment	Credit with an assessment
Total labor intensity	academic hours	540	216	108	108	108
	credit	15	6	3	3	3
Duration of practice	weeks	Distributed	Distributed	Distributed	Distributed	Distributed

5. The place of conducting the practice

The internship place is provided to the student by the head of the internship on the basis of the relevant contracts concluded with the basic organizations.

The Department of Mechanics and Mechatronics of the Institute of Space Technologies of the RUDN Engineering Academy serves as the basis for students to undergo Pedagogical practice.

A graduate student can come up with an initiative about the place of internship himself. The direction of the professional activity of the organization offered to students for practical training should correspond to the profile of the educational program and the types of professional activities for which the graduate of the program is preparing. The place of internship must be agreed with the head of the department, followed (if a positive decision is made) by the conclusion of a corresponding contract with the organization proposed by the student.

Postgraduate students with disabilities and / or belonging to the category of "disabled" undergo practical training in an accessible form in the laboratories of the

university, as well as in specialized organizations with which relevant contracts have been concluded and which have the ability (equipment, special facilities and infrastructure) to work with these categories of citizens.

6. The list of the planned results of the internship, correlated with the planned results of the development of the educational program

Pedagogical practice is aimed at the formation of the following competencies in students:

- readiness to teach in the main educational programs of higher education (GPC-2);
- readiness to teach training courses, disciplines (modules), conduct certain types of training sessions in Russian and a foreign language according to higher education programs (PC-7);
- the ability to organize educational, research and project activities of students in higher education programs (PC-8).

The result of the internship is the knowledge, skills, abilities and experience of professional activity that characterize the stages of competence formation and ensure the achievement of the planned results of mastering the educational program, presented in table 3.

Table 3 - The results of training in the discipline, correlated with the planned results of mastering the OPOP VO

Competence	Knowledge	Skills	Ability
1	2	3	4
readiness to teach in the main educational programs of higher education (OPK-2)	- regulatory and legal bases of teaching activities in the higher education system	- to carry out the selection and use the best teaching methods	- knowledge of the technology of designing the educational process at the level of higher education
readiness to teach training courses, disciplines (modules), conduct certain types of training sessions in Russian and a foreign language according to higher education programs (PC-7)	- knowledge of foreign languages, modern educational technologies	- to form, select, structure and present educational material, to prepare for training sessions	- knowledge of the skills of developing methodological support for the discipline, the skills of managing students' cognitive activity
the ability to organize educational, research and project activities of students in higher education programs (PC-8)	- knowledge of the organization of educational, research and project activities	- to form, create, carry out educational, research, project activities	- knowledge of the skills of organizing educational, research and project activities
Competence	Knowledge	Skills	Ability
1	2	3	4
<i>Willingness to organize the work of a research team in the field of professional activity</i>	- regulatory and legal bases of teaching activities in	- to carry out the selection and use the best teaching methods	- knowledge of the technology of designing the educational process

(OPK-8)	the higher education system		at the level of higher education
<i>Readiness to teach training courses, disciplines (modules), to conducting certain types of training sessions in Russian and a foreign language according to higher education programs (PC-5)</i>	- knowledge of foreign languages, modern educational technologies	- to form, select, structure and present educational material, to prepare for training sessions	- knowledge of the skills of developing methodological support for the discipline, the skills of managing students' cognitive activity

7. Structure and content of the practice

3 SEMESTER					
№ i/o	Practice stages	Types of work carried out by students	Educational work on forms, ac. h.		Total, ak.h.
			Contact work	Other forms of educational work	
1	Organizational and preparatory	Getting an individual assignment for practice from a supervisor	2	-	2
2		Safety instructions at the workplace (in the laboratory and / or at work)	2	-	2
3	Main	Familiarization with the educational work of the Department of Mechanics and Mechatronics	-	10	10
4		Development of educational and methodological materials	2	40	42
		Conducting classes and implementing the developed training tools	-	100	100
5		Current control of the internship by the manager	10	-	10
		Keeping an internship diary	-	10	10
9	Reporting	Preparation of a presentation on the passage of pedagogical practice	-	30	30
10		Intermediate certification (preparation and presentation)	10	-	10
IN TOTAL:			26	190	216
4 SEMESTER					
№ i/o	Practice stages	Types of work carried out by students	Educational work on forms, ac. h.		Practice stages
			Contact work	Other forms of educational work	
1	Organizational and preparatory	Getting an individual assignment for practice from a supervisor	2	-	2

2		Safety instructions at the workplace (in the laboratory and / or at work)	2	-	2
3	Main	Familiarization with the educational work of the Department of Mechanics and Mechatronics	-	2	2
4		Development of educational and methodological materials	2	20	22
		Conducting classes and implementing the developed training tools	-	48	48
5		Current control of the internship by the manager	8	-	8
		Keeping an internship diary	-	6	6
9	Reporting	Preparation of a presentation on the passage of pedagogical practice	-	10	10
10		Intermediate certification (preparation and presentation)	8	-	8
IN TOTAL:			22	86	108

5 SEMESTER

№ i/o	Practice stages	Types of work carried out by students	Educational work on forms, ac. h.		Practice stages
			Contact work	Other forms of educational work	
1	Organizational and preparatory	Getting an individual assignment for practice from a supervisor	2	-	2
2		Safety instructions at the workplace (in the laboratory and / or at work)	2	-	2
3	Main	Familiarization with the educational work of the Department of Mechanics and Mechatronics	-	2	2
4		Development of educational and methodological materials	2	20	22
		Conducting classes and implementing the developed training tools	-	48	48
5		Current control of the internship by the manager	8	-	8
		Keeping an internship diary	-	6	6
9	Reporting	Preparation of a presentation on the passage of pedagogical practice	-	10	10
10		Intermediate certification (preparation and presentation)	8	-	8
IN TOTAL:			22	86	108

6 SEMESTER

№ i/o	Practice stages	Types of work carried out by students	Educational work on forms, ac. h.		Practice stages
			Contact work	Other forms of	

				<i>educational work</i>	
1	Organizational and preparatory	Getting an individual assignment for practice from a supervisor	2	-	2
2		Safety instructions at the workplace (in the laboratory and / or at work)	2	-	2
3	Main	Familiarization with the educational work of the Department of Mechanics and Mechatronics	-	2	2
4		Development of educational and methodological materials	2	20	22
		Conducting classes and implementing the developed training tools	-	48	48
5		Current control of the internship by the manager	8	-	8
		Keeping an internship diary	-	6	6
9	Reporting	Preparation of a presentation on the passage of pedagogical practice	-	10	10
10		Intermediate certification (preparation and presentation)	8	-	8
IN TOTAL:			22	86	108

For students from among persons with disabilities and / or belonging to the category of «disabled», if necessary, the head of the practice develops individual tasks, a plan and an internship procedure taking into account the peculiarities of their psychophysical development, individual capabilities and health status, an educational program adapted for these students (if available) and in accordance with individual rehabilitation programs for disabled people.

8. Educational, scientific-research and scientific-production technologies used in practice

In the process of passing the Pedagogical practice, the following educational technologies are used:

- contact work of the student with the teacher, which consists in obtaining an individual task, passing a safety briefing, receiving advice on practical training, filling out current and reporting documentation, preparing and making a presentation on the results of the internship, as well as preparing and defending the report on the internship;

- other forms of educational work (educational activity), which include the main activity of the student to perform sections of the practice in accordance with the individual task, recommended methods and sources of literature, aimed at forming certain professional skills or experience of professional activity provided for by the internship program, as well as filling out current and reporting documentation, and preparing for the defense of the report on the internship.

During the internship, the following research and production technologies are used:

- mastering the methods of information analysis and interpretation of the results of research activities by students;

- performing written analytical and calculation tasks within the framework of the practice using recommended information sources;

- use of various computer software products for graphic, analytical and / or production purposes (depending on the place of internship and the specifics of the task);
- the use of various electronic library and legal reference systems by students, etc.

9. Educational, methodological and informational support of educational practice

Basic literature:

1. 1. Development of professionalism of a higher school teacher. studies. - method. guide. Ed. 2nd, ster./ V. S. Agapov [et al.]. - M.: RAGS Publishing House, 2017. -384 p. http://lib.rudn.ru/MegaPro2/UserEntry?Action=Rudn_FindDoc&id=470098&idb=0.

2. Miroshnichenko N. A., Stefanov S. A. To help a young teacher. method. manual/ N. A. Miroshnichenko, S. A. Stefanov. - Odessa: Yuridichna literatura, 2003. -92 p.

3. Skok G. B., Lygina N. I. How to design the educational process for the course: Textbook. Second edition, reprint. and supplement. - M.: Pedagogical Society of Russia. http://lib.rudn.ru/MegaPro2/UserEntry?Action=Rudn_FindDoc&id=470098&idb=0

4. Lapaeva M. G., Lapaev S. P.; Ministry of Education and Science of the Russian Federation, Federal State Budgetary Educational Institution of Higher Education "Orenburg State University". - Orenburg: OSU, 2017. - 249 p.: ill. - Bibliogr. in the book. - ISBN 978-5-7410-1791-3; [Electronic resource]. – URL: <http://biblioclub.ru/index.php?page=book&id=485476> (06.05.2018).\

5. Quality management of education: A practice-oriented monograph and a methodological guide/ Edited by M. M. Potashnik. M., 2016. URL: <http://biblioclub.ru/index.php?page=book&id=230540>.

Additional literature:

1. Federal State Educational Standard on 01.06.01 «Mathematics and Mechanics»
2. Local acts of the FSAOU VO the RUDN
3. Programs of disciplines of the Department of Mechanics and Mechatronics in the directions 27.03.04 «Management in technical systems», 27.04.04 «Management in technical systems».

Periodicals:

1. Journal «Expert»
2. Journal «Automation and control in technical systems»
3. Journal «Control, communication and Security Systems»

Resources of the «Internet» information and telecommunications network:

1. EBS of RUDN and third-party EBS, to which graduate students of the university have access on the basis of concluded contracts:

- Electronic library system of RUDN-EBS RUDN

<http://lib.rudn.ru/MegaPro/Web>

- EBS «University Library Online» <http://www.biblioclub.ru>

- EBC Yurayt <http://www.biblio-online.ru>
- EBS «Student Consultant» www.studentlibrary.ru
- EBS «Lan» <http://e.lanbook.com/>

2. Databases and search engines:

- fund of legal and regulatory and technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- SCOPUS abstract database
<http://www.elsevierscience.ru/products/scopus/>

Software:

During the practice, it is possible to use the following specialized software:

- MATLAB R2008b (361405 2008 г.);
- Mathcad 14 (7A1354555);
- Borland Developer Studio 2006 (License Certificate Number: 33080, 33081, 33082);

Methodological materials for practical training, maintenance of current and preparation of reporting documentation for students (also available in the TUIS RUDN in the corresponding section of the discipline):

1. Methodological guidelines for practical training, maintenance of current and preparation of accounting documentation for students in the direction 01.06.01 Mathematics and Mechanics, program: Dynamics, ballistics and motion control of aircraft (technical sciences) (appendix 2).

10. Material and technical support of pedagogical practice

For successful Teaching practice, you need: a workplace, a computer, a printer, a library fund.

To process the materials collected by the graduate student during the internship, there is access to computer classes.

The library fund should provide graduate students with basic literature in the amount of 0.5 copies per person.

Also, graduate students are given the opportunity to use the Internet in an educational institution.

11. Forms of practice certification

During the internship, the teacher carries out the current control of the student's performance of the task for practice. Based on the results of the practice, an interim certification is provided in the form of **a credit with an assessment** (based on the results of the defense of the practice report).

12. Fund of evaluation funds for conducting intermediate certification of students in practice

The fund of evaluation funds formed for the current monitoring of academic performance and intermediate certification of students in Pedagogical practice is presented in *appendix 1* to the work program of the practice and includes:

- the list of competencies formed during the internship;
- description of indicators and criteria for assessing competencies, description of assessment scales;
- standard control tasks or other materials necessary for the assessment of knowledge, skills, abilities and (or) experience of activity that characterize the level of competence formation;
- methodological materials that define the procedures for evaluating knowledge, skills, and (or) experience of activity that characterize the level of competence formation.

Developers:

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