

*Federal State Autonomous Educational Institution  
higher education  
Peoples' Friendship University of Russia  
Academy of Engineering*

**PROGRAM  
STATE FINAL CERTIFICATION**

**Direction of training:** 08.06.01 Engineering and construction technologies

**Scientific specialty:** Structural mechanics (implemented in English)

Moscow,

2020

The program of the state final certification was developed in accordance with the curriculum in the direction 08.06.01 Construction techniques and technologies, profile "Structural mechanics (implemented in English)", set in 2017, approved at a meeting of the Academic Council of the Engineering Academy \_\_\_ / \_\_\_\_\_ / 20\_\_ (Protocol No. \_\_\_\_\_).

The program of the state final certification was considered at a meeting of the department of Civil Engineering \_\_\_ / \_\_\_\_\_ / 20\_\_ (minutes No. \_\_\_\_\_).

**Developers:**

Assistant professor



A.S. Markovich

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M.I. Rynkovskaya

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## **1. The purpose and objectives of the state final certification**

State final certification (hereinafter - SFC) is carried out by state examination commissions (hereinafter - SEC) in order to determine the compliance of the results of mastering the basic educational program "Structural mechanics (implemented in English)" with the requirements of the educational standard of RUDN University, approved by the order of the rector of \_\_\_\_ \_\_\_\_20\_\_\_. No. \_\_\_\_\_.

The main **tasks** of the SFC are:

- completion of the formation and determination of the student's level of competence formation, provided for by the educational standard of the RUDN University in the direction 08.06.01 Engineering and technology of construction (universal, general professional and professional);
- determination of the level of theoretical and practical readiness of the graduate to solve scientific and professional problems in the areas of professional activity defined by the educational standard of the RUDN University;
- making a decision by the State Electoral Commission on assigning a student who has fully mastered the educational program qualification "Researcher. Teacher-researcher".

## **2. Forms and place of SFC in the structure of the educational program**

State final certification refers to the basic part of Block 4 of the curriculum.

State final certification for the educational program "Structural mechanics (implemented in English)" in the direction 08.06.01 Construction technique and technology is carried out in the form of preparation for passing and passing the state exam, as well as submitting a scientific report on the main results of the prepared scientific and qualification work (dissertation).

## **3. List of planned results of mastering the educational program**

As a result of mastering the educational program "Structural mechanics (implemented in English)" in the direction 08.06.01 Construction Engineering and Technology, the graduate must have the following universal, general professional and professional competencies:

- the ability to critically analyze and evaluate modern scientific achievements, generate new ideas when solving research and practical problems, including in interdisciplinary areas (UC-1);
- the ability to design and carry out complex research, including interdisciplinary, based on a holistic systemic scientific worldview using knowledge in the field of history and philosophy of science (UC-2);
- willingness to participate in the work of Russian and international research teams to solve scientific and scientific and educational problems (UC-3);
- readiness to use modern methods and technologies of scientific communication in the state and foreign languages, including the readiness to communicate in oral and written forms in Russian and foreign languages to solve the problems of professional activity, possession of foreign language communicative competence in official business, educational and professional, scientific, sociocultural, everyday spheres of foreign language communication (UC-4);

- the ability to follow ethical standards in professional activities (UC-5);
- the ability to plan and solve problems of their own professional and personal development (UC-6);
- possession of the methodology of theoretical and experimental research in the field of construction (GPC-1);
- possession of the culture of scientific research in the field of construction, including using the latest information and communication technologies (GPC-2);
- the ability to comply with the norms of scientific ethics and copyright (GPC-3);
- the ability to professionally operate modern research equipment and instruments (GPC-4);
- the ability to professionally present the results of their research and present them in the form of scientific publications and presentations (GPC-5);
- the ability to develop new research methods and their application in independent research activities in the field of construction (GPC-6);
- readiness to organize the work of the research team in the field of construction (GPC-7);
- readiness for teaching in the basic educational programs of higher education (GPC-8);
- possession of methods for the development of scientific and methodological foundations of research, improvement, theoretical, experimental and feasibility studies for the use of various technical solutions and technologies in construction (PC-1);
- possession of linear and nonlinear mechanics of structures and structures, physical and mathematical models, analytical and numerical methods of their calculation, including the calculation of structures and structures for reliability in extreme operating conditions (PC-2);
- readiness to teach training courses, disciplines (modules), conduct certain types of training sessions in Russian and foreign languages for higher education programs (PC-3);
- the ability to organize educational, research and project activities of students in higher education programs (PC-4).

#### 4. Scope of SFC and types of educational work

State final certification is carried out in the form of contact work and in the form of independent work of students (Table 1).

*Table 1 - Scope of SFC and types of educational*

Type of educational work		Total, ac. hours	Semester
			8
<b><i>State Exam</i></b>			
Contact work of a student with a teacher		4	4
Independent work of the student, including passing the exam		104	104
Type of certification test		exam	
Total labor intensity of the qualification test	academic hours	108	108
	credits	3	3
<b><i>PhD Qualification Thesis and Presentation</i></b>			
Contact work of a student with a teacher		8	8
Independent work of the student, including the defense of the FQP		208	208
Type of certification test		public presentation	

Total labor intensity of the qualification test	academic hours	216	216
	credits	6	6
<b>The total labor intensity of the SFC</b>	academic hours	<b>324</b>	<b>324</b>
	credits	<b>9</b>	<b>9</b>

## **5. State examination program**

The program of the state exam for the educational program "Structural mechanics (implemented in English)" in the direction 08.06.01 Construction engineering and technology corresponds to the program of the minimum candidate for the scientific specialty 05.23.17 Building mechanics (technical sciences), approved by order of Ministry of Education and Science of Russia from 08.10.2007, No. 274.

The state examination is carried out in writing using examination cards. Each exam ticket contains three questions.

The questions included in the examination card are interdisciplinary in nature and are aimed at determining the level of theoretical and practical readiness of the graduate to solve scientific and professional problems in the areas of professional activity defined by the educational standard of RUDN University.

The total number of examination tickets is determined by the number of graduate students admitted to the state examination. The student is given 90 minutes to prepare and defend a written answer to the ticket.

At the state exam by the members of the SEC, the graduate can be asked additional questions in the field of his future professional activity, provided for by the educational standard.

The list of questions for preparing for the state exam, as well as the criteria for evaluating the results of this stage of the state final certification are given in the fund of evaluation tools of the State Final Certification.

## **6. Requirements for a scientific report and the order of its presentation**

A scientific report on the main results of the prepared scientific and qualification work (dissertation) is a work performed by the student, demonstrating the level of his preparedness for independent scientific and professional activities.

The volume, structure and order of registration of the final qualifying work for postgraduate programs (scientific report) is regulated by the National standard GOST R 7.0.11-2011 "Dissertation and thesis abstract. Structure and design rules", as well as the Regulations for the preparation and execution of scientific and qualification work (dissertation) on training programs for highly qualified personnel at the Peoples' Friendship University of Russia, approved by the Rector's Order No. 40 of January 20, 2017.

## **7. Regulatory and educational-methodological support of the SFC**

1. Federal Law "On Education in the Russian Federation" dated December 29, 2012 No. 273-FZ.

2. The procedure for organizing and carrying out educational activities for educational programs of higher education - programs for the training of scientific and pedagogical personnel in postgraduate studies (postgraduate studies), approved by Order of the Ministry of Education and Science of Russia dated November 19, 2013 No. 1259.

3. The procedure for conducting state final certification for educational programs of higher education - programs for the training of scientific and pedagogical personnel in graduate school (postgraduate studies), residency programs, assistant programs-internships, approved by Order of the Ministry of Education and Science of the Russian Federation of 18.03.2016 No. 227.

4. Regulations on the state final certification of students in higher education programs - programs for the training of scientific and pedagogical personnel in graduate school, approved by the Rector's Order No. 41 dated January 20, 2017.

5. Regulations for the use of the "Antiplagiat" system for checking written educational work at RUDN University, approved by the Rector's Order No. 228 dated March 30, 2018.

6. National standard GOST R 7.0.11-2011 "Dissertation and thesis abstract. Structure and design rules".

7. The program of the minimum candidate for the scientific specialty 05.23.17 Building mechanics (technical sciences), approved by order of the Ministry of Education and Science of Russia dated 08.10.2007, No. 274

8. Basic literature indicated in the work programs of disciplines / modules of the educational program (in preparation for the state exam).

### ***Resources of the information and telecommunications network "Internet":***

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

- Electronic library system RUDN - EBS RUDN <http://lib.rudn.ru/MegaPro/Web>
- EBS "University Library Online" <http://www.biblioclub.ru>
- EBS Yurayt <http://www.biblio-online.ru>
- EBS "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EBS "Doe" <http://e.lanbook.com/>

2. Databases and search engines:

- electronic fund of legal and normative-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:***

Specialized software for preparing a scientific report and independent work of students:

- Computer WIN XP PRO 10;
- Interactive whiteboard Poly Vision.

*Methodological materials for independent work of students in the process of preparing a scientific report:*

1. The regulations for the preparation and execution of scientific qualification work (dissertation) on training programs for highly qualified personnel at the Peoples' Friendship University of Russia, approved by the Rector's Order No. 40 of January 20, 2017.

## **8. Logistics support of the SFC**

To prepare for the state exam and submit a scientific report, students use the premises for independent work.

To conduct a state exam and / or present a scientific report, a room with a capacity of 12 or more people is used, in which workplaces are equipped for all members of the SEC, with the ability to listen to reports, view public presentations of speakers, keep records and minutes, there are places for listeners, those wishing to attend the procedure for submitting a scientific report. The necessary equipment of the premises includes:

- equipment for public presentations, including a multimedia screen, a projector, audio equipment.
- a board to illustrate the answers to questions;
- tablets / stands of not less than A1 format (if necessary), for placing graphic material on them within the framework of a scientific report.

The student can notify the issuing department of his wishes for additional material and technical equipment (if necessary) of the auditorium designated for conducting the SFC with a written statement no later than a week before the defense procedure.

## **9. Fund assessment tools**

The fund of assessment tools, formed for the state final certification of students in the educational program "Structural mechanics (implemented in English)" in the direction 08.06.01 Construction technique and technology, includes:

- a list of competencies that students must master as a result of mastering the educational program;
- description of indicators and criteria for assessing competencies, as well as assessment scales;
- typical control tasks or other materials necessary to assess the results of mastering the educational program;
- methodological materials that determine the procedures for assessing the results of mastering the educational program.

### ***9.1 The list of competencies that students must master as a result of mastering the educational program***

As a result of mastering the educational program "Structural mechanics (implemented in English)" in the direction 08.06.01 Construction Engineering and Technology, the graduate must have all the universal, general professional and professional competencies listed in paragraph 3 of this Program.

### ***9.2 Indicators, criteria and scales for assessing competencies in the process of conducting SFC***

Based on the results of the state exam, a score is given in accordance with the point-rating system adopted by the RUDN University (score / ECTS / RF score, maximum 100 points).

The score based on the results of the state exam is determined by the results of checking the student's written answer to the exam ticket and (if necessary) by the quality of the student's answers to additional questions from the SEC members.

The scale and criteria for assessing the state exam are presented in Table 2.

*Table 2 - Scale and criteria for assessing the state exam*

<b>Grading scale</b>	<b>86-100 points</b>	<b>69-85 points БАЛЛОВ</b>	<b>51-68 points</b>	<b>0-50 points</b>
<b>Критерии</b>	<ul style="list-style-type: none"> <li>- the content of the examination card material is fully disclosed;</li> <li>- the material is presented correctly, in a certain logical sequence;</li> <li>- terminology is used accurately;</li> <li>- shown the ability to illustrate theoretical provisions with specific examples, to apply them in a new situation;</li> <li>- the answer sounded independently, without leading questions;</li> <li>- demonstrated the ability to creatively apply knowledge of theory to solving professional problems;</li> <li>- demonstrated a high level of competence formation.</li> </ul>	<ul style="list-style-type: none"> <li>- questions of the examination material are presented in a systematic and consistent manner;</li> <li>- demonstrated the ability to analyze the material, but not all conclusions are reasoned and evidentiary;</li> <li>- the assimilation of the main literature is demonstrated.</li> <li>- the answer contains one of the following disadvantages:</li> <li>- there are small gaps in the statement that did not distort the content of the answer;</li> <li>- a mistake or more than two shortcomings were made in the coverage of secondary questions, which are easily corrected at the comment of the examiner.</li> </ul>	<ul style="list-style-type: none"> <li>- the content of the material is incomplete or inconsistently disclosed, but a general understanding of the issue is shown and skills are demonstrated that are sufficient for further assimilation of the material;</li> <li>- mastered the main categories on the considered and additional issues;</li> <li>- there were difficulties or mistakes in the definition of concepts, the use of terminology, corrected after several leading questions;</li> <li>- with incomplete knowledge of the theoretical material, insufficient formation of competencies, abilities and skills was revealed, the student cannot apply the theory in a new situation;</li> <li>- the assimilation of the main literature is demonstrated.</li> </ul>	<ul style="list-style-type: none"> <li>- the main content of the educational material has not been disclosed;</li> <li>- found ignorance or misunderstanding of the most or the most important part of the educational material;</li> <li>- mistakes were made in the definition of concepts, when using terminology, which were not corrected after several leading questions.</li> <li>- competencies, skills and abilities are not formed.</li> </ul>

The scientific report is assessed in accordance with the point-rating system adopted by the RUDN University (score / ECTS / RF score, maximum 100 points) according to the following indicators, which allow assessing the level of formation of the competencies provided by the educational program:

<b>Indicators for evaluating a scientific report</b>	<b>Maximum score</b>
- correspondence of the content of the scientific report to the approved SCW topic and the assigned task, clarity of the formulation of the goals and objectives of the research	20
- reliability, originality and novelty of the results obtained in the SCW	10
- the practical value of the completed SCW	10
- quality of presentation and report	5
- compliance with the approved requirements for registration of the SCW	10
- quality of presentation and report	10
the quality of answers to questions from members of the SEC	10
- assessment of the scientific work of the graduate student by the supervisor (review)	10
- assessment of the SCW by a reviewer (review)	10
- availability of publications on the topic of work, certificates, awards, etc.	5



The scale and criteria for evaluating a scientific report based on the results of SCW are presented in Table 3.

*Table 3 - Scale and criteria for evaluating a scientific report*

<b>Compliance of the content of the scientific report with the approved SCW topic and the assigned task, clarity of the formulation of the goals and objectives of the research</b>				
<b>Scale</b>	<b>15-20 points</b>	<b>5-14 points</b>	<b>1-4 points</b>	<b>0 points</b>
<b>Criteria</b>	The SCW was carried out on a topical topic, the goals and objectives of the research were clearly formulated.	The SCW was carried out on a topical topic, there are minor remarks on the formulation of the goals and objectives of the study.	The relevance of the SCW topic raises doubts. The goals and objectives of the SCW are formulated with significant remarks, not clearly enough. There is no link between the essence of the topic and the most significant directions for solving the problem under consideration.	The goals and objectives of the SCW do not correspond to the approved topic of work and do not disclose the essence of the research being conducted
<b>Reliability, originality and novelty of the results obtained in the SCW</b>				
<b>Scale</b>	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
<b>Criteria</b>	A deep analysis of the object of research has been carried out. The reliability, originality and novelty of the conclusions on the research topic are noted.	The analysis of the research object has not been carried out deeply enough. The reliability, originality and novelty of the conclusions have a number of minor remarks.	The reliability, originality and novelty of the conclusions based on the results obtained give rise to serious remarks.	The reliability of the results is questioned, the originality and novelty of the results is absent
<b>Practical value of the completed SCW</b>				
<b>Scale</b>	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
<b>Criteria</b>	The paper provides a new solution to a theoretical or practical problem that is essential for the professional field.	The work provides a partial solution to a theoretical or practical problem that is important for the professional field.	In the work, only the directions of solving the problem are considered, the results obtained are of a general nature or insufficiently reasoned.	Results are of no practical value
<b>Scientific presentation style</b>				
<b>Scale</b>	<b>4-5 points</b>	<b>2-3 points</b>	<b>1 points</b>	<b>0 points</b>
<b>Criteria</b>	The scientific style of presenting the results of work with correct references to literary sources is noted	There are minor remarks on the scientific nature of the presentation of the results and / or on the correctness of references to sources	There are serious remarks about the scientific style of presenting the results of work and / or about the correctness of references to sources	The style of presentation does not correspond to scientific, references to sources are incorrect
<b>Compliance with the approved requirements for registration of the SCW</b>				
<b>Scale</b>	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
<b>Criteria</b>	SCW fully complies with the requirements for registration	SCW with minor remarks meets clearance requirements	SCW has significant comments on compliance with the requirements for registration	SCW does not meet the requirements for registration
<b>Quality of presentation and report</b>				
<b>Scale</b>	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>

Criteria	The presentation and report fully reflect the content of the SCW, demonstrated a good command of the material of the work, confident, consistent and logical presentation of the research results исследования	There are minor remarks to the presentation and / or report on the SCW topic. Minor inaccuracies were made in the presentation of the results of the SCW, which did not distort the main content of the work.	There are significant comments on the quality of the presentation and / or report on the SCW topic. Significant inaccuracies were made in the presentation of the material, affecting the essence of understanding the main content of the SCW, the consistency of the presentation was violated.	The presentation and / or report does not reflect the essence of the SCW. No demonstrated proficiency in the material of the work.
<b>Quality of answers to questions from members of the SEC</b>				
Scale	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
Criteria	The answers to the questions are given in full	Answers are given incompletely and / or with minor errors	The answers to the questions are incomplete, with serious errors	Questions not answered
<b>Assessment of the scientific work of a postgraduate student by the supervisor</b>				
Scale	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
Criteria	Excellent	Good	Satisfactorily	Unsatisfactory
<b>Assessment of the SCW by the reviewer</b>				
Scale	<b>7-10 points</b>	<b>4-6 points</b>	<b>1-3 points</b>	<b>0 points</b>
Criteria	Excellent	Good	Satisfactorily	Unsatisfactory
<b>Availability of publications on the topic of work, certificates, awards, etc.</b>				
Scale	<b>4-5 points</b>	<b>2-3 points</b>	<b>1 points</b>	<b>0 points</b>
Criteria	The research results have been tested in speeches at conferences, seminars, there are publications in the press, the results are confirmed by a certificate of implementation, etc.	The research results are declared for a report at conferences, seminars, or accepted for publication in print, for implementation.	The research results are prepared for discussion at conferences, seminars, or prepared for publication in print, for implementation.	Research results are not planned for publication, presentation at conferences, seminars, for implementation.

### ***9.3 Typical control tasks or other materials necessary to assess the results of mastering the educational program***

#### ***List of questions to prepare for the state exam:***

1. Calculation of statically indeterminate flat bar systems by the force method.
2. Complete system of equations of the theory of elasticity.
3. Basic quadratic forms in the theory of surfaces.
4. Shells of revolution under the action of an axisymmetric load.
5. Energy method for determining critical forces for rod systems.
6. Calculation of statically indeterminate flat rod systems by the method of forces on the action of temperature.
7. Plane problem of the theory of elasticity in Cartesian coordinates. Plane deformation.
8. Lines of curvature on the surface. Asymptotic lines.
9. Momentless theory of shells.

10. Static method (equilibrium method) for determining the critical forces for rod systems.
11. Calculation of statically indeterminate flat bar systems by the displacement method.
12. Plane problem of the theory of elasticity in Cartesian coordinates. Flat stress state.
13. Ruled and developable surfaces.
14. Gentle shell.
15. Stability of flat bending of beams in pure bending.
16. Calculation of flat frames for stability by the displacement method.
17. Calculation of rectangular plates using double trigonometric series.
18. Gaussian (total) curvature of a surface. Average curvature of the surface.
19. Calculated equations for shells in curvature lines.
20. Calculation of bar structures for shock effects.
21. Free vibrations of beams as systems with distributed mass.
22. Calculation of rectangular plates using single trigonometric series.
23. Curvilinear coordinates on the surface.
24. Boundary conditions in the problems of shell statics.
25. Calculation of beams on an elastic foundation according to I.A. Simvulidi.
26. Calculation of beams of finite length on an elastic foundation according to the method of A.N. Krylov.
27. Three groups of the system of 17 computational equations of the linear theory of thin shells.
28. Compilation of any of the 6 equilibrium equations for a quadrangular fragment of a thin shell.
29. Calculation of statically indeterminate flat rod systems by the displacement method. Support draft.
30. Determination of displacements of any section of a statically indeterminate system by the force method.
31. Boundary conditions of a thin shell of a quadrangular outline in plan: the number of unknown parameters of the stress-strain state and the number of boundary conditions.
32. Indicate the theory of calculation of shells.
33. Give examples of surfaces with negative, positive, zero Gaussian curvature. Minimum surface area.
34. Internal efforts in the theory of thin shells and their expression through stress.
35. Necessary conditions for the emergence of a momentless state in the shell.
36. Closed and open cylindrical shells. Approaches to solving problems of determining VAT.
37. Grouping of unknowns in the calculation of symmetric statically definable frames by the force method. The property of symmetrical and inversely symmetric plots. The system of canonical equations of the method of forces after grouping.
38. Double-hinged arches. Calculation of double-hinged arches using the force method. Double-hinged arches with tightening. Hinged arches.
39. Grouping of unknowns in the calculation of symmetrical statically definable frames by the displacement method. The property of symmetrical and reverse symmetric plots. The system of canonical equations of the method of forces after grouping.
40. Calculation of statically indeterminate flat rod systems by the displacement method. The degree of kinematic definability of the rod system. Determination of the num-

ber of unknown angles of rotation and linear displacements of rigid nodes. Basic system of the displacement method. Canonical equations of the displacement method.

41. Stability of the flat form of bending of beams loaded with bending moments at the ends.

42. Energy method for determining critical forces. Calculation procedure.

43. Stability of a centrally compressed straight bar with any boundary conditions.

44. Calculation of flat frames for stability by the method of displacement.

45. Internal forces in plates during bending.

46. Impact action of the load on the rod.

47. Calculation of long beams on an elastic foundation.

48. Calculation of statically indeterminate beams using the force method.

49. Calculation of statically indeterminate beams using the displacement method.

50. The simplest problems of the theory of plasticity.

51. Torsion of a bar of rectangular cross-section.

Examples of complex production tasks included in the ticket for the state exam:

1. Shaping of an umbrella-type shell, the middle surface of which is formed by plane curves of one class, and each section is a surface of negative or positive Gaussian curvature, as exemplified by a sports center.

2. Five types of ruled helical surfaces applicable to screws, anchors, ramps, screw conveyors and screw supports.

Research topics carried out at the department:

1. Research on the geometry and design of torso shells of the same slope with an elliptical base.

2. Geometrically nonlinear problem of determining the stress-strain state of a torso shell obtained by parabolic bending of a flat metal workpiece.

3. Optimal shells of revolution and the choice of the optimality criterion.

4. Optimal transfer shells and the choice of the optimality criterion.

5. Aerodynamic surfaces defined by algebraic plane curves, their application for underwater objects and fairings of aircrafts.

6. Calculation and design of torso shells, the middle surfaces of which are specified in a curvilinear non-orthogonal conjugate coordinate system, on arbitrary quadrangular plans as applied to construction and architecture.

7. Calculation of thin cyclic shells with generating circles in the planes of the beam with straight guides.

8. Investigation of shells of the velaroid type on a circular plan.

9. Shells formed by congruent curves on a circular cylinder: application and determination of SSS from an arbitrary load and a rigid cylinder, determination of SSS from an arbitrary load when a guide cylinder and a shell of congruent sections with the same bending stiffness work together.

10. Research of umbrella and umbrella-type casings: shaping, determination of VAT, creation of innovative forms of casings and recommendations for their implementation.

#### ***9.4 Methodological materials defining the procedures for evaluating the results of mastering the educational program***

##### ***Methodology for assessing the results of the state exam***

Based on the results of the state exam, a score is given in accordance with the point-rating system adopted by the RUDN University (score / ECTS / RF score).

According to the results of the state exam, a graduate student can receive a maximum of 100 points. The score is determined based on the results of checking the student's written answer to the exam ticket and (if necessary) the quality of the postgraduate student's answers to additional questions from the members of the SEC. The grade received by the graduate based on the results of the state exam is put on the list of the state examination (by the chairman of the SEC), in the minutes of the meeting of the SEC (by the secretary of the commission) and communicated to the student.

##### ***Methodology for evaluating the results of submitting a scientific report***

For the efficiency and convenience of the work of the SEC members, it is recommended to provide them with a supporting document "Worksheet for assessing the formation of competencies during the SIA", the form of which is given in Appendix 1. In the process of hearing a scientific report, the members of the SEC give points for each of the above indicators. At the end of the presentation of the report, each of the members of the SEC summarizes all the assigned points.

The final assessment of the formation of competencies is an assessment given following the results of hearing a scientific report by all members of the SEC who attended the hearing. To determine the final grade, it is necessary to calculate and round off the arithmetic average of the grades given by all members of the state commission. In the event of any controversial issues, the chairman of the SEC has a casting vote.

The total score received by the student based on the results of the presentation of the scientific report is put down in the examination sheet (by the chairman of the SEC) and in the minutes of the SEC meeting (by the secretary of the commission).

<b>WORK SHEET</b> assessing the formation of competencies during the SFC		
<b>Direction of training:</b>		
<b>Educational program (scientific specialty):</b>		
<b>Full name of the member of the SEC:</b>		
<b>Date:</b>		
<b>Qualification test:</b>	<i>Scientific presentation</i>	
<b>Full name of the graduate:</b>		
Indicators for assessing the protection of SCW	Maximum score	Actual score
- correspondence of the content of the scientific report to the approved SCW topic and the assigned task, clarity of the formulation of the goals and objectives of the research	20	
- reliability, originality and novelty of the results obtained in the SCW	10	
- практическая ценность выполненной SCW	10	
- style of presentation of a scientific report	5	
- compliance with the approved requirements for registration of the SCW	10	
- quality of presentation and report	10	
- the quality of answers to questions from members of the SEC	10	
- assessment of the scientific work of the graduate student by the supervisor (review)	10	
- assessment of the SCW by a reviewer (review)	10	
- availability of publications on the topic of work, certificates, awards, etc.	5	
<b>Сумма баллов:</b>	<b>100</b>	
<b>SEC member's signature</b>		