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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 (PMU) - the developer of the EP HE)

**STATE FINAL CERTIFICATION PROGRAM**

**Recommended by the ICSC for the field of study/specialty:**

**27.03.04 Control in Technical Systems**

(code and name of the direction of training/specialty)

**The state final certification is carried out as part of the implementation of the main  
professional educational program of higher education:**

**Data Engineering and Space Systems Control**

(name (profile/specialization) of the EP HE)

## 1. PURPOSE AND OBJECTIVES OF THE FINAL STATE ATTESTATION (SSC)

**The purpose of** the FSC within the framework of the implementation of the EP "Data Engineering and Space Systems Control / Data Engineering and Space Systems Management" is to determine the compliance of the results of the development of the EP HE by students with the relevant requirements of the OS HES.

**The objectives** of the state final certification are:

- checking the quality of teaching the individual basic humanitarian knowledge, natural science laws and phenomena necessary in professional activity;
- determination of the level of theoretical and practical preparedness of the graduate to perform professional tasks in accordance with the qualification obtained;
- establishing the degree of the individual's desire for self-development, improving his qualifications and skills;
- checking the formation of a graduate's stable motivation for professional activity in accordance with the types of tasks of professional activity provided for by the Educational System of Higher Education of RUDN University;
- assessment of the level of graduates' ability to find organizational and managerial solutions in non-standard situations and readiness to be responsible for them;
- ensuring the integration of education and scientific and technical activities, increasing the efficiency of the use of scientific and technical achievements, reforming the scientific sphere and stimulating innovative activities;
- Ensuring the quality of training of specialists in accordance with the requirements of the OS VO RUDN University.

## 2. REQUIREMENTS FOR THE RESULTS OF THE DEVELOPMENT OF THE EDUCATIONAL PROGRAM

A student who has no academic debt and has fully completed the curriculum or individual curriculum of the EP HE is allowed to take the FSC.

Upon completion of the EP HE, the graduate must have the following **universal competencies (MC)**:

<b>Code and name of the authorized capital</b>
GC-1. He is able to search, critically analyze and synthesize information, apply a systematic approach to solving problems.
GC-2. Is able to determine the range of tasks within the framework of the goal and choose the best ways to solve them, based on the current legal norms, available resources and restrictions
GC-3. Able to carry out social interaction and fulfill his role in a team
GC-4. Is able to communicate in interpersonal and intercultural interaction in Russian (as a foreign language) and foreign language(s) on the basis of proficiency in interrelated and interdependent types of reproductive and productive foreign language speech activity, such as listening, speaking, reading, writing and translation in everyday life, socio-cultural, educational and professional, official, business and scientific spheres of communication.
GC-5. Is able to perceive the intercultural diversity of society in socio-historical, ethical and philosophical contexts.
GC-6. Able to manage their time, build and implement a trajectory of self-development based on the principles of lifelong learning
GC-7. Is able to maintain the proper level of physical fitness to ensure full social and professional activities
GC-8. Is able to create and maintain safe living conditions in everyday life and in professional activities to preserve the natural environment, ensure the sustainable development of society,

<b>Code and name of the authorized capital</b>
including in the threat and occurrence of emergencies and military conflicts
GC-9. Able to use basic defectological knowledge in the social and professional spheres
GC-10. Able to make informed economic decisions in various areas of life
GC-11. Is able to form an intolerant attitude to manifestations of extremism, terrorism, corrupt behavior and counteract them in professional activities
GC-12. Is able to: search for the necessary sources of information and data, perceive, analyze, remember and transmit information using digital means, as well as with the help of algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems; evaluate information, its reliability, build logical conclusions based on incoming information and data

**- general professional competencies (GPC):**

<b>Code and name of the defense industry</b>
GPC-1 Able to analyze the tasks of professional activity based on provisions, laws and methods in the field of natural sciences and mathematics
GPC-2 Able to formulate tasks of professional activity based on knowledge, profile sections of mathematical and natural science disciplines (modules)
GPC-3 Able to use fundamental knowledge to solve basic management problems in technical systems in order to improve professional activities
GPC-4 Capable of assessing the effectiveness of management systems developed on the basis of mathematical methods
GPC-5 Able to solve the problems of developing science, engineering and technology in the field of management in technical systems, taking into account the legal regulation in the field of intellectual property
GPC-6 Able to develop and use algorithms and programs, modern information technologies, methods and means of control, diagnostics and management, suitable for practical application in the field of his professional activity
GPC-7 is capable of performing the necessary calculations of individual units and devices of monitoring, automation and control systems, choosing standard automation, measuring and computer equipment when designing automation and control systems
GPC-8 Capable of setting up measuring and control facilities and complexes, carrying out their routine maintenance
GPC-9 Capable of performing experiments according to specified methods and processing the results using modern information technologies and technical means.
GPC-10 Capable of developing (on the basis of current standards) technical documentation (including in electronic form) for routine maintenance of systems and means of control, automation and management
GPC-11 Able to understand the principles of modern information technology and use them to solve professional problems

**- Professional competencies (PC):**

<b>PC code and name</b>
PC-1 Capable of collecting, processing and interpreting the data of modern scientific research necessary for the formation of conclusions on relevant scientific research, including remote sensing data of the Earth
PC-2 Able to participate in the development of schematic documentation for the flight control system for launch vehicles and spacecraft, in the preparation of publications on the results of research and development
PC-3 Capable of processing and analyzing information in the field of application of mathematical methods and information technologies in the field of application of remote sensing data from space
PC-4 Able to formulate, analyze and solve engineering problems in the field of ballistics, motion mechanics and spacecraft motion control based on professional knowledge

PC code and name
PC-5 Capable of developing, debugging, checking performance, modifying software; apply methods and tools of software design, develop and coordinate software documentation for software

### 3. COMPOSITION OF THE FSC

The FSC can be held both in a full-time format (students and the state examination committee are at RUDN University during the FSC), and using distance learning technologies (DLT) available in the Electronic Information and Educational Environment of RUDN University (EIOS).

The procedure for conducting the FSC in person or with the use of (DLT) is regulated by the relevant local regulatory act of RUDN University.

The State Final Examination of Higher Education "Data Engineering and Space Systems Control / Data Engineering and Space Systems Management" includes:

- state examination (SE);
- defense of the final qualification work (thesis).

### 4. GE PROGRAM

The state exam is held in one or more disciplines and (modules) of the EP HE, the results of the development of which are of decisive importance for the professional activity of graduates.

The volume of the State Exam for EP HE is 3 credits.

The state exam is held in two stages:

**The first stage** is the assessment of the level of theoretical training of the graduate in the form of **computer testing** using the tools available in the Electronic Information and Educational Environment of RUDN University (EIOS);

**The second stage** is the assessment of the graduate's practical preparation for future professional activity in writing.

In order to prepare students for the State Final Examination, the head of the Higher Education Programme (no later than one calendar month before the start of the State Final Examination) is obliged to familiarize the students of the final year with this FSC program, an exhaustive list of theoretical issues included in the State Final Examination, examples of production situational tasks (cases) that will need to be solved in the process of passing the certification test, as well as with the procedure for conducting each of the stages of the State Final Examination and the methodology for assessing its results (with assessment materials).

Before the SE, students are required to consult on the issues and tasks included in the SE program (pre-examination consultation).

**The procedure for conducting computer testing** within the framework of the FSC is as follows:

The test task contains 50 questions randomly selected from the question bank. The student is given 100 minutes to complete the test task. 2 points are awarded for a correctly answered question, and 0 points for an incorrect one.

**The procedure for conducting the second stage of the SE** is as follows:

1) A written test of knowledge is carried out using examination tickets, each examination ticket contains three questions and a task. The questions and tasks included in the exam ticket are interdisciplinary in nature and are aimed at determining the level of theoretical and practical preparedness of the graduate to solve professional problems defined by the RUDN

University educational standard in accordance with the research type of professional tasks that the educational program is focused on.

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

3) At the state exam, the members of the State Examination Commission may ask the student additional questions in the field of professional activity of the graduate, provided for by the educational standard.

The assessment of the results of the State Exam is carried out in accordance with the methodology set out in the assessment materials presented in the Appendix to this FSC program.

## **5. REQUIREMENTS FOR A THESIS AND THE PROCEDURE FOR ITS DEFENSE**

A thesis is a work performed by a student (several students together), demonstrating the level of preparedness of a graduate for independent professional activity.

The list of topics for graduation qualification works offered to students for implementation is approved by the order of the head of the educational program implementing the EP, and is brought to the attention of the students of the final year by the head of the program no later than 6 months before the start date of the FSC.

It is allowed to prepare and defend a thesis on the topic proposed by students (students) in accordance with the established procedure.

A student who has passed the State Exam is allowed to defend the thesis.

Only a fully completed thesis, signed by the graduate (graduates), its performer, supervisor, consultant (if any), the head of the issuing BUP and PMO, which has passed the procedure of external review (for master's and specialist's programs is mandatory) and checked for the volume of borrowings (in the "Antiplagiat" system) are allowed to be defended. A thesis admitted to the defense must be accompanied by a supervisor's feedback on the graduate's work during the preparation of the thesis.

In order to identify and timely eliminate shortcomings in the structure, content and design of the thesis, no later than 14 days before the date of its defense, a rehearsal of the defense of the student's work (pre-defense) is held in the presence of the thesis supervisor and other teachers of the graduating thesis.

The thesis defense is held at an open meeting of the State Examination Commission (SEC).

The certification test is conducted in the form of an oral report of students with a mandatory multimedia (graphic) presentation reflecting the main content of the thesis.

At the end of the report, the defenders give oral answers to the questions that have arisen from the members of the State Examination Commission on the subject, structure, content or design of the thesis and the profile of the Civic Chamber of Higher Education. The report and/or answers to the questions of the members of the State Examination Commission may be in a foreign language.

The stages of the thesis, the requirements for the structure, volume, content and design, as well as the list of mandatory and recommended documents submitted for defense are specified in the relevant methodological guidelines.

Evaluation of the results of the thesis defense is carried out in accordance with the methodology set out in the assessment materials presented in the Appendix to this FSC program.

## 6. MATERIAL AND TECHNICAL SUPPORT FOR THE FSC

To prepare for the state exam and defend the thesis, students use the premises for independent work.

To conduct the test part of the state exam, it is necessary to have a classroom equipped with workstations with personal computers (at least 12) equipped with the necessary software and Internet connection.

For the main part of the state exam and the defense of the thesis, it is necessary to have a room with a capacity of 12 or more people, in which workplaces are equipped for all members of the State Examination Commission, with the opportunity to listen to reports, view public presentations of speakers, keep notes and protocols, there are seats for listeners who want to attend the thesis defense procedure. The necessary equipment of the room includes:

- equipment for public presentations of the results of the thesis, including a multimedia screen, a projector, audio equipment.
- a board to illustrate the answers to questions.

The student can notify the graduating department of the wishes for additional material and technical equipment (if necessary) of the classroom appointed for the defense of the thesis by a written application no later than a week before the defense procedure.

## 7. EDUCATIONAL, METHODOLOGICAL AND INFORMATION SUPPORT OF THE STATE FINAL EXAMINATION

*Basic literature for preparing for the GE and/or performing and defending a thesis:*

1. Tolpegin, O. A. Methods of optimal management: a textbook and a workshop for universities. - 2nd ed., ispr. Moscow: Yurayt Publishing House, 2021. — 234 p. — (Higher Education). — ISBN 978-5-534-13534-3. — Text : electronic // EBS Yurayt [site]. — URL: <https://urait.ru/bcode/465342>.

2. Beklaryan L. A., Flerova A. Yu., ZhGCova A. A. Metody optimal'nogo upravleniya: uchebnoe posobie [Methods of optimal management]. MIPT, 2018.

3. Aleksandrov V.V., Zlochevsky S.I., Lemak S.S., Parusnikov N.A. Introduction to the dynamics of controlled systems. Moscow, MSU Publ., 1993.

4. Alekseev V.M., Tikhomirov V.M., Fomin S.V. Optimal management. Moscow, NaGCa Publ., 1979;

5. Alekseev V.M., Galeev E.M., Tikhomirov V.M. Collection of Optimization Problems. Moscow, NaGCa Publ., 1984.

6. Atans M., Falb P. Optimal Management. Moscow, Mashinostroenie Publ., 1968.

7. Bliss G.A. Lectures on Variational Calculus. Moscow, Foreign Literature Publ., 1950.

8. Boltyansky V.G. Mathematical Methods of Optimal Control. Moscow, NaGCa Publ., 1969.

9. Gnoensky L.S., Kamensky G.A., Elsgolts L.E. Mathematical foundations of the theory of controlled systems. Moscow, NaGCa Publ., 1969.

10. Pontryagin L.S., Boltyansky V.G., Gamkrelidze V.R., Mishchenko E.F. Mathematical Theory of Optimal Processes. Moscow, Fizmatgiz Publ., 1961.

11. Roytenberg Y.N. Automatic control. Moscow, NaGCa Publ., 1992.

12. Solodovnikov V.V., Plotnikov V.N., Yakovlev A.V. Theory of Automatic Control of Technical Systems. Moscow, MSTU Publ., 1993.

13. Methods of Classical and Modern Theory of Automatic Control : Textbook in 5 vols. Vol. 1 : Mathematical Models, Dynamic Characteristics and Analysis of Automatic Control Systems / Ed. by K.A. Pupkov. - 2nd ed., revised and supplemented - Moscow: MSTU Publ., 2004. - 656 p.

14. Collection of Problems on the Course "Theory of Automatic Control": Educational and Methodological Manual / K. A. Pupkov, D. A. Andrikov; Grew up. University of Friendship of Peoples. - Moscow : RUDN University, 2014 (Moscow : RUDN University). - 107 p.
15. Nefedov V.N., Osipova V.A. Kurs discretenoy matematiki: Ucheb. allowance. Moscow, MAI Publ., 1992.
16. Kuznetsov O.P., Adelson-Velsky G.M. Discrete mathematics for an engineer. Moscow, Energoatomizdat Publ., 1988.
17. Gurov V.V., ChGCanov V.O. Osnovy teorii i organizatsii EVM - Internet-universitet informatsionnykh tekhnologii - INTUIT.ru, 2006 - 280 p.
18. Cormen Thomas H., Lazerson Charles I., Rivest Ronald L., Stein Clifford Algorithms. Construction and analysis, 2nd edition – Moscow: Izd. Williams House, 2007. - 1296 p.
19. Knut Donald E. Iskusstvo obrazmirovaniya v 3-kh tomakh [The Art of Programming in 3 Volumes]. Williams House, 2008. – T.1 – 720, T.2 – 832 p., T.3 – 824 p.
20. Aho Alfred V., Hopcroft John, Ullman Jeffrey D., Data Structures and Algorithms - - Moscow: Izd. Williams House, 2000. – 384 p.
21. Bakhvalov N.S., Zhidkov N.P., Kobelkov G.M. Chislennyye metody [Numerical methods]. Moscow, NaGCa Publ., 1987.
22. Samarsky A.A., Gulin A.V. Chislennyye metody [Numerical methods]. Moscow, NaGCa Publ., 1989.
23. Amosov A.A., Dubinsky Yu.A., Kopchenova N.V. Vychishitel'nyye metody dlya inzhenerov [Computational methods for engineers]. Moscow: Vyssh. Shk., 1994.
24. Plis A.I., Slivina N.A. Laboratory Workshop on Higher Mathematics. Moscow: Vyssh. Shk., 1994.
25. Sbornik zadach po metodam razchetov [Collection of problems on methods of computing]. Moscow, NaGCa Publ., 1994.
26. Glovatskaya A.P. Metody i algoritmy vychislitel'nykh matematiki [Methods and algorithms of computational mathematics]. Moscow, Radio i svyaz Publ., 1999. 408 p. (In Russian)
27. MalyGC A.A., Pazizin S.V., Pogozhin N.S. Introduction to Information Protection in Automated Systems – Moscow: Hot Line-Telecom, 2001, 148 p.
28. Belov E.B., Los V.P., Meshcheryakov R.V., Shelupanov A.A. Osnovy informatsionnoy bezopasnosti [Fundamentals of information security]. Textbook for Higher Educational Institutions, Moscow: Goryachaya liniya – Telekom, 2006. - 544 p.
29. Besekersky Tikhonov V.A., Raikh V.V. Informatsionnaya bezopasnost': kontseptual'nyye, pravovyye, organizatsionnyye i tekhnicheskiye aspekty [Information Security: Conceptual, Legal, Organizational and Technical Aspects]. allowance. – Moscow: Gelios ARV, 2006.- 528 p.
30. Shangin V.F. Informatsionnaya bezopasnost' komp'yuternykh sistem i seti [Information security of computer systems and networks]. Manual .- M.: ID "FORUM": INFRA-M, 2008.-416 p.
31. Moore T., Pym D., Ioannidis C., Economics of Information Security and Privacy, Springer, 2010, - 320 p.
32. Ensuring the information security of business, Ed. Kurilo A.P., Alpina Publishers, 2011, - 392 p.
33. Bondarev V.V. Vvedenie v informatsionnoy bezopasnost' avtomatizirovannykh sistem (2-e izdaniya) [Introduction to information security of automated systems (2nd edition)]. Moscow: BMSTU. 2018. – 252 p.

34. Organizational and legal support of information security. edited by A.A. Aleksandrov, M.P. Sychev – Moscow: BMSTU. 2018. – 292 p.
35. MalyGC A.A. Osnovy politiki bezopasnosti kriticheskikh sistem informatsionnoy infrastrGctury [Fundamentals of security policy for critical systems of information infrastructure]. – Moscow: Hot Line – Telecom, 2018. – 314 p.
36. Metody klassicheskoy i sovremennoy teorii avtomaticheskogo upravleniya: Uchebnik v 5-ti tomakh [Methods of classical and modern theory of automatic control: Textbook in 5 volumes]. Moscow: BMSTU Publ., 2004.
37. Dorf R., Bishop R. Sovremennye sistemy upravleniya [Modern control systems] – Moscow: Laboratory of Basic Knowledge Publ., 2004. – 832 p.
38. Besekersky V.A., Popov E.P. Teoriya sistem avtomaticheskogo regulirovaniya [Theory of automatic regulation systems]. Moscow, Professiya Publ., 2004. – 747 p.
39. Xu D., Meyer A. Sovremennaya teoriya avtomaticheskogo upravleniya i ee primenenie [Modern theory of automatic control and its application]. Moscow, Mashinostroenie Publ., 1972.
40. Popov E.P. Teoriya lineynykh sistem avtomaticheskogo regulirovaniya i upravleniya [Theory of linear systems of automatic regulation and control]. Moscow, NaGCa Publ., 1978.
41. Popov E.P. Theory of nonlinear systems of automatic regulation and control. Moscow, NaGCa Publ., 1988.
42. Solodovnikov V.V., Plotnikov V.N., Yakovlev A.V. Osnovy teorii i elementy sistem avtomaticheskogo regulirovaniya [Fundamentals of theory and elements of automatic regulation systems]. Ucheb. Manual for Higher Educational Institutions. Moscow, Mashinostroenie Publ., 1985.
43. Theory of automatic control. In 2 parts/ A.A. Voronov, D.P. Kim, V.M. Lokhin and others; Ed. by A.A. Voronov. Moscow: Vyssh. Shk., 1986.
44. Pervozvanskiy A.A. Kurs teorii avtomaticheskogo upravleniya [Course of the theory of automatic control]. Moscow, NaGCa Publ., 1986.
45. Afanasyev V.N., Kolmanovsky V.B., Nosov V.R. Mathematical theory of control system design. Moscow: Vyssh. Shk., 1989, 1998.
46. Topcheev Yu.I., Tsyplyakov A.P. Zadachnik po teorii avtomaticheskogo regulirovaniya [Task book on the theory of automatic regulation]. Ucheb. posobie dlya vuzov – M.: Mashinostroenie Publ., 1977.
47. Collection of Problems on the Theory of Automatic Regulation and Control. Moscow, NaGCa Publ., 1978.
48. Merkin D.R. Introduction to the theory of stability of movement. Moscow, NaGCa Publ., 1987.
49. Afanasyev V.N., Kolmanovsky V.B., Nosov V.R. Mathematical theory of control system design. Moscow, Vysshaya shkola Publ., 2003. 615 p. (In Russian)
50. Afanasyev V.N. Analiticheskoe konstruirovaniye nepreryvnykh sistem upravleniya [Analytical construction of continuous control systems]. Ucheb. posobie – RUDN, 2005. 148 p. (In Russian)
51. Afanasyev V.N. Optimal'nye sistemy upravleniya [Optimal control systems]. Analytical construction. Ucheb. posobie – RUDN, 2007. 260 p. (In Russian)
52. Panteleev A.V., Letova T.A. Metody optimizatsii v primerakh i zadach [Optimization methods in examples and tasks]: Textbook – Moscow: Vysshaya shkola, 2005. – 544 p.
53. Vanko V.I., Ermoshina O.V., Kuvyrkin G.N. Variational calculus and optimal control – Moscow: BMSTU; 2002. – 488 p.



54. Andreeva E.A., Tsiruleva V.M. Variational Calculus and Optimization Methods. Moscow: Vysshaya shkola. 2006. – 584 p.
55. Elsgolts L.E. Variational Calculus. Moscow, LKI Publ., 2008. – 208 p.
56. Attetkov A.V., Galkin S.V., Zarubin V.S. Metody optimizatsii [Methods of optimization], Moscow, BMSTU Publ., 2003, 440 p.
57. Kallan R. Osnovnye kontseptsii nenarnykh seti [Basic concepts of neural networks]. Williams House, 2001. – 288 p.

*Additional literature for preparing for the GE and/or performing and defending the thesis:*

1. Matthews J.G., Fink K.D. Numerical methods. Using Matlab. Moscow, St. Petersburg, Kiev: Williams Publishing House, 714 p.
2. Demidovich B.P., Maron I.A., Shuvalova E.Z. Osnovy vysdol'tel'noy matematiki [Fundamentals of Mathematics]. St. Petersburg, Lan Publ., 2006.
3. Kopchenova N.V., Maron I.A. Computational mathematics in examples and problems. Moscow, NaGCa Publ., 1972.
4. Samarsky A.A. Introduction to Numerical Methods. Moscow, NaGCa Publ., 1997.
5. Voevodin V.V., Kuznetsov Yu.A. Matrix and Calculations. Moscow, NaGCa Publ., 1984.
6. Ortega Dzh., Poole U. Introduction to Numerical Methods for Solving Differential Equations. Moscow, NaGCa Publ., 1986.
7. Zade L., Dezoer Ch. Theory of linear systems. (The method of state space). Moscow, NaGCa Publ., 1970.
8. Moroz A.I. Kurs teorii sistem [Course of system theory]. Moscow: Vyssh. Shk., 1987.
9. Wanem M. Linear multidimensional control systems: Geometric approach. Moscow, NaGCa Publ., 1980.
10. Topcheev Yu.I. Atlas for the design of automatic regulation systems. Moscow, Mashinostroenie Publ., 1989.
11. Torokin A.A. Fundamentals of engineering and technical protection of information. – Moscow: Oc'-89, 1998.-336 p.
12. Devyanin P.N., Mikhalsky O.O., Pravikov D.I., Shcherbakov A.Yu., Theoretical Foundations of Computer Security, Moscow: Radio and Communication, 2000. - 192 p.
13. Pyarin V.A., Kuzmin A.S., Smirnov S.N. Bezopasnost' elektronnoy biznesa [Security of electronic business]. Moscow, Gelios ARB Publ., 2002. – 432 p.
14. Snytnikov A.A. Licensing and certification in the field of information protection. – Moscow: Gelios ARV, 2003.- 192 p.
15. Sobolev A.N., Kirillov V.M. Fizicheskie osnovy tekhnicheskikh sredstva obespecheniya informatsionnoy bezopasnosti: Uchebnoe posobie [Physical foundations of technical means of ensuring information security]. – Moscow: Gelios ARV, 2004.- 144 p.
16. Streltsov A.A. Pravovoye obespecheniye informatsionnoy bezopasnosti Rossii: teoreticheskie i metodologicheskie osnovy [Legal support of information security of Russia: theoretical and methodological foundations]. – Minsk: BELLITFOND, 2005.-304 p.
17. Shumskiy A.A., Shelupanov A.A. Sistemnyy analiz v zashchite informatsii [System analysis in information protection]. allowance. – Moscow: Gelios ARV, 2005.- 224 p.
18. Semkin S.N., Belyakov E.V., Grebenev S.V., Kozachok V.I. Osnovy organizatsionnogo obespecheniya informatsionnogo bezopasnosti ob'ektov informatizatsii [Fundamentals of organizational support of information security of informatization objects]. allowance. – Moscow: Gelios ARV, 2005.- 192 p.

*Resources of the information and telecommunication network "Internet":*

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

- RUDN University Electronic Library System – RUDN University Electronic Library System <http://lib.rudn.ru/MegaPro/Web>
- Electronic Library "University Library Online" <http://www.biblioclub.ru>
- EBS Urait <http://www.biblio-online.ru>
- EBS "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Troitsky Bridge"

2. Databases and search engines:

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

*Educational and methodological materials for students' independent work in preparation for the State Exam and/or thesis and preparation of the thesis \*:*

1. Guidelines for the implementation and design of the thesis for the EP of Higher Education Data Engineering and Space Systems Control / Data Engineering and Space Systems Management

2. Procedure for checking the thesis for the volume of borrowings in the "Antiplagiat" system.

3. The procedure for conducting the FSC in the EP of HE "Data Engineering and Space Systems Control / Data Engineering and Management of Space Systems" using DLT, including the procedure for identifying the personality of a graduate.

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

## **8. ASSESSMENT MATERIALS AND A POINT-RATING SYSTEM FOR ASSESSING THE LEVEL OF COMPETENCE FORMATION AMONG GRADUATES**

Evaluation materials and a point-rating system\* for assessing the level of competence formation based on the results of mastering the discipline "Data Engineering and Space Systems Control / Data Engineering and Space Systems Management" are presented in the Appendix to this FSC program.

\* - OM and BRS are formed on the basis of the requirements of the relevant local regulatory act of RUDN University (provision/procedure).

### **THE HEAD OF THE ISSUING BUP:**

**Head of the Department of**

**Mechanics and Control Processes**

**Razumny Yu.N.**

\_\_\_\_\_  
Name of Dep

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Surname I.O.

**HEAD OF THE DEPARTMENT OF HIGHER EDUCATION:**

**Professor of the Department of  
Mechanics and Control Processes**

**Razumny Yu.N.**

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Position

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Signature

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Surname I.O.