Federal State Autonomous Educational Institution for Higher Education
Peoples' Friendship University of Russia named after Patrice Lumumba
(RUDN University)

ENGINEERING ACADEMY

educational division (faculty/institute/academy) as programme developer)

Department of Transport Equipment and Technology

(department realizing the PhD program)

COURSE SYLLABUS

Operation of Vehicle (special chapters)

(course title)

Scientific specialty:

2.9.5. Operation of Vehicle

(scientific speciality code and title)

The course instruction is implemented within the PhD programmes:

Operation of Vehicle

(PhD program title)

2026

1. DISCIPLINE (MODULE) GOAL

The purpose of mastering the disciplines "Operation of Vehicle (special chapters)" is to prepare for the passing of candidate exams, as well as gaining knowledge, skills and experience in the research field, characterizing the stages of formation of competencies and achieving their results of mastering the program of the educational program.

the main tasks of the disciplines are:
- teaching the basics of theoretical research in the field of road transport operation;
- registration of ideas about the basic concepts, objects, logic of scientific research;

2. REQUIREMENTS TO PHD-STUDENTS ON FINISHING THE COURSE

Mastering the discipline " Operation of Vehicle (special chapters)" is aimed at preparing for the candidate's exams, as well as mastering the following competencies:

- possession of the methodology of theoretical and experimental research in the field of equipment and technologies of land transport;
- possession of a culture of scientific research in the field of equipment and technologies of land transport, including the use of the latest information and communication technologies;
- the ability to develop new research methods and their application in independent research activities in the field of land transport equipment and technologies, taking into account the rules for observing copyrights;
- the ability to draw up a comprehensive business plan (R&D, R&D, product release);
- willingness to develop devices and technologies that contribute to the improvement, optimization and increase in operational reliability, environmental safety of vehicles, methods for their calculation and design;
- the ability to create and develop effective calculation methods and experimental research in technical operation and service, development of calculation methods in the operation of road transport.

As a result of studying the discipline, the student must:

Know: the methodology of theoretical and experimental research in the field of road transport operation;

Be able to: conduct theoretical and experimental research in the field of operation of road transport;

Own: the main methods of theoretical and experimental research in the field of operation of road transport.

3. WORKLOAD OF THE DISCIPLINE AND TYPES OF ACTIVITIES

The total workload of the discipline " Operation of Vehicle (special chapters)" is 3 credits.

Table 3.1. Types of academic work by period of study of the postgraduate programme

Type of study		TOTAL, ac. h.	Course			
			3			
Contact work, ac.h.		60	60			
including:						
Lectures (**LC**)		30	30			
Laboratory work (**LW**)						
Practical/seminar classes (**SP**)		30	30			
Independent work of students, ac.h.		48	*48*			
Control (credit with grading), ac.h.						
Total time commitment of the discipline	ac.h.	**108**	**108**			
	credits	**3**	**3**			

4. CONTENT OF THE DISCIPLINE

Table 4.1. Content of the discipline (module) by type of study work

Name of discipline section	Section (topic) content	Type of study
Section number 1. prospects development of road transport in transport system of the country.	Topic 1.1. The position of road transport in the structure of social production and the transport system of the country. Interaction with nature, society, forecasts and ways of development motor transport complex;	LC, SP
Section No. 2. Optimization and planning of production processes in transport	Topic 2.1. Methods of planning and evaluation, organization and management of passenger and cargo transportation, maintenance, repair and service of vehicles, use of program-target and logistics principles. Substantiation and development of requirements for the rational structure of the park, the performance of transport, technological and loading and unloading equipment;	LC, SP
Section No. 3. Operational requirements for rolling stock	Topic 3.1. Operational requirements for general purpose vehicles, for special vehicles: firefighters, refrigerators, sports; operational requirements for trailers and semi-trailers, special bodies;	LC, SP
Section No. 4. Safety of the motor transport complex	Topic 4.1. Ensuring environmental and road safety of the motor transport complex. Methods of ecological monitoring of traffic flows. Influence on traffic safety indicators of the technical condition of the car, road network, methods of traffic organization. Fundamentals of conducting road transport expertise;	LC, SP
Section No. 5. Ensuring the safety of transportation and traffic in road transport	Topic 5.1. Substantiation and development of recommendations for the preparation of transport and technological schemes for the transportation of goods and passengers, the organization of traffic	LC, SP

Name of discipline section	Section (topic) content	Type of study
	flows, methods for monitoring compliance with work and rest regimes drivers;	
Section No. 6. Regulatory support of activities road transport.	Topic 6.1. The current state and directions of improvement of transport legislation, regulatory support for the activities of road transport;	LC, SP
Section No. 7. Operational reliability of vehicles, units and systems	Topic 7.1. Theoretical foundations for assessing the reliability of technical systems. Vehicle reliability indicators. Patterns of changes in the technical condition of vehicles and units, technological equipment in order to improve maintenance and repair systems, determine the standards for technical operation, rational service life of vehicles;	LC, SP
Section No. 8. Efficiency and quality of operational materials. Alternative fuels and energies	Topic 8.1. The main properties of operational materials, their influence on the performance indicators of the operation of vehicles. The use of alternative fuels and energies in road transport, their impact on the transportation process and technical operation. Methods of resource saving in motor transport complex;	LC, SP
Section No. 9. Technological processes of maintenance and repair of rolling stock of road transport	Topic 9.1. Methods for ensuring the performance of vehicles. Technology and organization of maintenance, repair and service; methods for diagnosing technical condition of cars, aggregates and materials.	LC, SP
Section No. 10. Infrastructure road transport	Topic 10.1. Composition, main functions and modern directions of development infrastructure of the transportation process, technical operation and service	LC, SP
Section number 11. Information technology in transport	Topic 11.1. Main functions, purpose and directions of development of new information technologies in transportation, technical operation and service.	LC, SP
Section No. 12. Modern technologies of car repair production	Topic 12.1. Technological processes for restoring the performance of vehicles. Improving methods for restoring parts, assemblies and managing car repair production.	LC, SP
Section No. 13. Operation of vehicles in special natural and climatic conditions	Topic 13.1. Requirements and features of the organization of maintenance and repair of vehicles in special industries, climatic and other conditions	LC, SP
Section No. 14. Road transport personnel	Topic 14.1. Development of requirements for road transport personnel. Improving the training and retraining of specialists and personnel of road transport; forecast needs.	LC, SP

5. EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 5.1. Logistical support for the discipline

Type of audience	Classroom equipment	Specialised training/laboratory equipment, software and materials for the discipline (if necessary)
Lecture room	Audience for holding classes lecture type, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentation	Projector, screen, chalkboard, computer
Seminar room	Audience for holding classes lecture type, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentation	
For independent work of students	An auditorium for students' independent work (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the EIOS.	

* - the classroom for students' independent work is obligatory!

6. METHODOLOGICAL SUPPORT AND LEARNING MATERIALS

Main readings:

1. Volgin, V.V. Warehouse: logistics, management, analysis / V.V. Volgin. - 11th ed., revised. and additional - Moscow: Publishing and Trade Corporation "Dashkov and Co", 2015. - 724 p. : tables, diagrams, graph. - Bibliography. in book. - ISBN 978-5-394-01944-9; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=426462.

2. Fundamentals of technical regulation. Certification and licensing: teaching aid / S.A. Korobskoy, P.A. Ivanov, O.N. Moiseev and others - Moscow; Berlin: Direct-Media, 2015. - 322 p. : ill., diagrams, tab. - Bibliography. in book. - ISBN 978-5-4475-4483-6; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=276167

3. Molodtsov, V.A. Vehicle safety / V.A. Molodtsov; Ministry of Education and Science of the Russian Federation, Federal State Budgetary Educational Institution of Higher Professional Education "Tambov State Technical University". - Tambov: Publishing house of FGBOU VPO "TSTU", 2013. - 237 p. : ill. - Bibliography. in book. - ISBN 978-5-8265-1222-7; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=277843

4. Cars: design, calculation and consumer properties: textbook / comp. L.I. Vysochkina, M.V. Danilov, V.Kh. Maliev, D.N. Slyadnev and others - Stavropol: Stavropol State Agrarian University, 2013. - 68 p.

; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=233075

5. Mikhnevich, E.V. The device and operation of cars: a laboratory workshop: a manual / E.V. Mikhnevich, T.N. Byalt-Lychkovskaya. - Minsk: RIPO, 2014.

- 294 p. : diagrams, tables, illustrations. - Bibliography. in book. - ISBN 978-985-503-424-8; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=463644

Additional куфвшитпы:

1. Okhotnikov, B.L. Operation of internal combustion engines: textbook / B.L. Hunters; Ministry of Education and Science of the Russian Federation, Ural Federal University. the first President of Russia B. N. Yeltsin. - Yekaterinburg: Ural University Press, 2014. - 142 p. : illustrations, tables, schemes. - ISBN 978-5-7996-1204-7; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=275818

2. Kulakov, A.T. Features of the design, operation, maintenance and repair of power units for trucks: study guide / A.T. Kulakov, A.S. Denisov, A.A. Makushin. - Moscow: Infra-Engineering, 2013. - 448 p. - ISBN 978-5-9729-0065-7; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=234778

3. Kapulin, D.V. Enterprise information structure: study guide

/ D.V. Kapulin, A.S. Kuznetsov, E.E. Noskov; Ministry of Education and Science of the Russian Federation, Siberian Federal University. - Krasnoyarsk: Siberian Federal University, 2014. - 186 p. : schemes., ill. - Bibliography. in book. - ISBN 978-5-7638-3128-3; The same [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=435685

Resources of the information and telecommunication network "Internet":

1. the RUDN electronic library system and third-party electronic libraries to which university students have access on the basis of contracts:

- RUDN Electronic Library System - RUDN EBS http://lib.rudn.ru/MegaPro/Web
- The University Library Online electronic library system http://www.biblioclub.ru
- The Yurite electronic library system http://www.biblio-online.ru
- Student Consultant electronic library system www.studentlibrary.ru
- Lan LGS http://e.lanbook.com/
- Trinity Bridge

2. databases and search engines:

- electronic collection of legal and normative-technical documentation http://docs.cntd.ru/
- search engine Yandex https://www.yandex.ru/
- Google search engine https://www.google.ru/
- SCOPUS abstract database http://www.elsevierscience.ru/products/scopus/

Teaching materials for students' independent work while mastering the discipline/module:*

1. Course of lectures on the discipline " Operation of Vehicle (special chapters)".

* - all teaching materials for students' independent work are placed in accordance with the current procedure on the discipline page in TUIS!

7. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR MIDTERM ATTESTATION OF STUDENTS IN THE DISCIPLINE (MODULE)

Assessment toolkit and a grading system to evaluate the level of competences (competences in part) formation as the course results are specified on the TUIS platform.

DEVELOPERS:

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Position, BD	Name and surname

THE HEAD OF THE EDUCATIONAL PROGRAMME:

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