RUDN university

ACADEMY OF ENGINEERING

MAINTENANCE AND TECHNICAL EXPERTISE OF MOTOR VEHICLES

MASTER'S PROGRAMME DEGREE

PROGRAM ADVANTAGES

- The program is based on the idea of highly professional training of specialists in the field of operation and technical expertise of transport-technological machines and the need to use the mathematical apparatus and software in practical research.
- The main advantages of the program include the following: training is carried out by a team of teachers, each of whom is a professional in his field of knowledge, has both theoretical knowledge and practical experience.
- Teachers conduct classes using modern formats and methods of interactive learning: case studies, trainings, master classes, business games, discussions, “brainstorming”.
- The practice-oriented program has been built and is updated annually taking into account industry demands for the level of training of masters in the field of operation of transport and technological machines and complexes.
- In the process of training, masters communicate with the heads of relevant departments of industrial enterprises and government structures, both in the framework of scientific and methodological seminars and open lessons and practices.

STUDYING PROCCESS

120 credits.
Lectures, practical exercises and independent work several types of practice.

AUTOMOTIVE TECHNICAL EXPERTISE

- The main provisions of the automotive technical expertise.
- Types of expertise in road transport.
- Features of technical expertise.
- Features of the examination of the quality of repairs.
- Examination of the technical condition of automobile engines.
- Examination of the technical condition of transmission components.
- Examination of the technical condition of control systems.
- Examination of the technical condition of the chassis.
- Examination of the technical condition of the body and paintwork

TRACE EXAMINATION

- The main provisions of the traceological examination.
- Types of expertise in road transport.
- Features of the traceological examination.
- Features of the examination of the technical condition of vehicles as the cause of road accidents.

SCIENTIFIC BASIS OF THE EXPERIMENT

- Application of mathematical statistics methods in the analysis of measurement results of characteristics and reliability indicators of automotive equipment.
- Experimental research program.
- Methods of experimental research.
- Evaluation of the accuracy of measurements during an experimental study.

VEHICLE TEST METHODS

- Features of testing various types of vehicles, their components and assemblies.
- Means and equipment.
- Types and features of the tests, the necessary equipment.
- Types of measuring tools.
- Calibration of measuring instruments.
- Instruments and sensors for testing.
- The concept of a sensor.
- Parametric and generator sensors.
- Types of sensors.
- Ways to turn on sensors.
- Statistical processing of results.
- The main types of statistical data processing.
- Dispersion and regression analysis.
- Measuring systems.

SCIENTIFIC BASIS OF TECHNOLOGY AND STANDARDS OF MAINTENANCE, SAFETY AND DIAGNOSTICS

- The scientific approach to the maintenance system (MOT) and repair.
- Methods for calculating reliability, durability.
- Approximation of the dependences of the technical state of automobile mechanisms using modern methods and means.
- Scientific basis of maintenance and repair systems in Russia and abroad.
- Evaluation of the effectiveness of car service standards.
- Development of service standards for car service enterprises.

MODERN PROBLEMS AND DIRECTIONS OF DEVELOPMENT OF TECHNICAL OPERATION OF CARS

- Reliability characteristics of the main components, assemblies, systems and the whole car as a whole, garage equipment, personnel and processes.
- The weight of reliability of units and systems for ensuring the operability of rolling stock.
- Factors causing changes in the technical condition of the product and its components during operation and storage.
- The impact on the reliability of the object of the quality of the product design, manufacturing technology, operating conditions, the quality of the used operational materials, maintenance and repairs.

PROCESS MODELING

- The role of modeling in science and technology.
- The creature of the modeling method.
- Basic concepts of mathematical modeling.
- Stages of modeling.
- Simulation tasks.
- Modeling Methods.
- Forms of linear dynamic mathematical models/
- Linear dynamic mathematical models of an automatic control system for the speed of an internal combustion engine.
- Suspension model of transport vehicles.
- A mathematical model of the movement of a transport vehicle in a given road environment.
- Tools for the study of dynamic mathematical models.
- Implementation of mathematical models on a digital computer and in the environment of visual graphic programming.

STUDENTS FEEDBACK

KIRILL ARKADIEVICH IVANOV, RUSSIA

Master's program has taught me not to stop learning. During my graduate studies, I gained vast experience in the use and analysis of scientific literature. Scientific research is of great interest. You get deep satisfaction when you see how the results of routine research turn into finished work.

HEAD OF THE PROGRAMME

IGOR KEVORKOVICH DANILOV

Doctor of Technical Sciences, Professor at the Department of Mechanical Engineering and Instrument Engineering, Head of the Operation of Transport and Technological Machines and Complexes Department.

FIELDS OF SCIENTIFIC INTERESTS:

Research in the field of reliability of vehicles, Work processes in internal combustion engines (ICE), ICE fuel equipment, Alternative fuels, Automotive technical expertise.

Author of scientific articles in peer-reviewed Russian and foreign scientific journals (Higher Attestation Commission, SCOPUS, Web of Science).

Regularly makes presentations at Russian and international conferences on the operation of motor vehicles, energy and heat engines.