

Description of the specialization

I. INNOVATIVE MEANS OF TRANSPORT

1. Optimisation of means of transport through reduction of their weight and dimensions, with preserving their functionality (reduction of energy consumption and emission of contaminants, materials consumption, improvement of efficiency).
2. Intermodality of means of transport, including diffusion of technical and technological solution between transport systems.
3. Infrastructure for exploitation of innovative means of transport.
4. Modular construction of means of transport, including exchange of driving units.
5. Special and specialized means of transport, including unmanned units.
6. Means of transport powered with alternative energy sources, along with infrastructure for their operation.
7. Autonomous means of transport.

II. PROECOLOGICAL CONSTRUCTION SOLUTIONS AND COMPONENTS IN MEANS OF TRANSPORT

1. Alternative drives and power sources in transport, including contactless induction systems for energy transmission to means of transport.
2. Drives employing renewable energy sources and waste and biofuel energy sources, as well as electric drives.
3. Innovative systems and components for processing, including energy recovery and storage.
4. Optimisation and improvement of structure and functionality of components in means of transport.
5. Innovative systems for recycling, recovery and utilisation.
6. Innovative systems for reduction of harmful emission.
7. Creating and development of safety systems for means of transport.
8. Innovative elements of means of transport equipment.
9. Biomechanical systems in elements of the means of transport equipment.

III. TRANSPORT MANAGEMENT SYSTEMS

1. Organisational and technical measures allowing realisation of preferences for mass transport.
2. Organisational and technical measures allowing realisation of preferences for ecological means of transport.

3. Organisational and technical measures allowing development of road transport of goods.
4. Development of intelligent transportation systems, including *inter alia* modal transport and optimal energy management.
5. Smart proecological management systems for the acces to protected zones.
6. Smart management systems for traffic safety in transport.
7. Systems of communication between the means of transport and the environment.
8. Systems minimising impact of the means of transport on the environment, including systems and technologies for evaluation of the influence of the means of transport on health and safety.

IV. INNOVATIVE MATERIALS IN THE MEANS OF TRANSPORT

1. Innovative metal materials.
2. Innovative polymer materials.
3. Innovative composite materials.
4. Innovative coverings and coatings.
5. Innovative hybrid materials, including organic sheets or bionic structures.
6. Innovative materials based on recyclable raw materials.
7. Innovative exploitation materials, including low-emission energy carriers.

V. INNOVATIVE PRODUCTION TECHNOLOGIES FOR THE MEANS OF TRANSPORT AND THEIR PARTS

1. Modification and construction of new technological lines and production systems for means of transport, components and parts, including recycling.
2. Innovative systems for designing and assessment of the quality in terms of: methods, techniques, measuring infrastructure and procedures related to (technical) quality control at all stages of production, and finished products, including assessment of their functional qualities using modern measuring techniques.
3. Innovative systems for logistics and supply chain management.
4. Innovative systems for management of knowledge and information flow in enterprises.
5. Innovative methods for limiting the influence of production processes on the environment.
6. Innovative technologies of production, including the technologies of joining, modelling and processing.