Description of the specialization

I. DESIGNING, CONSTRUCTION AND CONVERSION OF SPECIALIZED VESSELS AND THEIR SPECIALIZED EQUIPMENT

1. Designing vessels and their modules, systems, and devices, including hardware and software solutions for the modeling and simulation of performance of structures, systems,
   and complete vessels.
2. Construction and conversion of vessels and their blocks and sections, including the vessels of reduced impact on the environment, exploration and fish-processing vessels, off-shore service vessels, ecological passenger-vehicle ferries, ships and ship sections made of aluminum, vessels for navigation in arctic conditions, search and rescue vessels, research vessels, shallow-draft barges and pushers, yachts and motor boats, cranes and floating tanks, as well as other specialist vessels
3. Unmanned / autonomous vessels, including those designed for the monitoring, inspecting and handling off-shore facilities, marine hydro-engineering facilities, ships, seaport infrastructure, environmental condition, and assessment and exploitation of sea resources.
4. Technological and technical solutions reducing adverse impact of vessels on the environment, including those with electric and hybrid propulsion system, powered by LNG, and other alternative fuels, systems for storage, distribution and refueling of the low-carbon fuels and LNG, as well as infrastructure and solutions reducing emission of pollutants into the water and air.
5. Technologies, systems and devices for vessels, including the marine power engineering, automation and hydraulics, remote monitoring of operation and use of a ship, economic efficiency and energy efficiency, operation in compliance with the environmental protection standards and remote control in critical states, navigation and communication systems, system for control and assessment of technical condition of on-board devices, ventilation and air conditioning systems, propulsion devices and systems, as well as energy storage and conversion systems.

II. DESIGNING, CONSTRUCTION AND MODIFICATION OF MARINE AND COASTAL STRUCTURES

1. Multifunctional, modular research and measurement platforms for field testing of innovative technical solutions in the exploitation of sea resources in real

conditions, as well as simulators and trainers of objects.
2. Unmanned mobile platforms for diagnostics and monitoring of condition of marine structures as well as equipment, techniques and measurement systems for acquisition and processing of the marine environment data.
3. Floating and stationary structures of marine equipment for conversion of energy from renewable sources (including the off-shore wind farms and converters of tidal wave and water current energy) and platforms and distributed systems for exploration, extraction, and processing.
4. Components and equipment of offshore facilities (including specialized cranes, grippers, overhead cranes, compensating and tensioning systems, specialized hoist systems and hydraulic systems).
5. Marine structures for development of aquaculture and technologies, devices and methods of marine organisms breeding.
6. Recreational, residential, educational and training facilities at sea.
7. Devices and means for transport and handling of large-size marine supporting structures.
8. Technologies and devices of enhanced efficiency and energy effectiveness used for the purposes of the off-shore production and water transport.
9. Development of hyperbaric technologies.
10. Designing, technology, devices, systems and methods for exploration, estimation and acquisition of marine and seabed resources.
11. Designing, technology, devices, systems of marine and offshore fuel terminals of alternative fuels, including LNG.

III. PROCESSES AND DEVICES APPLIED FOR LOGISTICS BASED ON SEA AND INLAND WATERWAY TRANSPORT

1. ICT systems and technologies for monitoring, integration, control and management of water transport modes and transport infrastructure.
2. Systems of organization, supervision, navigation, e-navigation, decision support, risk management, and safety of shipping and cargo transport.
3. Passive and active protection systems for marine facilities and infrastructure.
4. Energy-efficient cargo handling technologies in seaports (e.g. defrosting of bulk cargo containers).
5. Development of intermodal transport technologies on routes to / from the seaports.
6. Simulation systems and environments using the mixed or augmented reality as a method of controlling the water transport modes.