INSTRUCTIONS
for enrolment in the Doctoral (PhD) Programme "Maritime Studies"
in the academic year 2024/2025

Fifteen (15) approved enrolment places are advertised.

Citizens of the Republic of Croatia and persons who do not hold citizenship of the Republic of Croatia may apply, provided that they:

1. have completed a university graduate study or university integrated undergraduate and graduate studies or university specialist studies in the scientific area of Technical Sciences (with 300 ECTS credits including undergraduate studies) or, exceptionally, have completed graduate or integrated or university specialist studies in other fields of science with the condition of passing specific courses;
2. have obtained the academic degree of Master of Science, which they obtained on the basis of a study programme started before the higher education reform of 2005;
3. have completed university undergraduate studies in the scientific field of Traffic and Transport Technology on the basis of study programmes started before the higher education reform of 2005, or undergraduate studies in other scientific fields with the condition of passing specific courses.

Applicants who have obtained a diploma from a foreign educational institution must submit a decision from the competent body on the recognition of the foreign diploma before enrolling in doctoral studies.

Applicants who have completed the degree programmes mentioned in points 1, 2 and 3 with an average grade of at least 3.5 may enrol in doctoral programme. Exceptionally, applicants who have completed their studies with an average grade of less than 3.5 may be enrolled in the programme, if they can present a positive evaluation of their previous scientific research and/or professional activity by the Committee for Science and Doctoral Studies of the University of Rijeka Faculty of Maritime Studies.

Applicants who have completed postgraduate scientific or postgraduate specialist studies, as well as applicants who have already had contact with scientific research activity in their previous work (participation in and presentation at scientific conferences, publication of papers in conference proceedings and/or scientific journals, work on scientific research projects, etc.) will be given preference in the admission process.

The doctoral study programme lasts 3 (three) years.

The total price for the programme is EUR 10,617.82. If the costs of tuition are covered by the company or institution where the applicant is employed, the relevant decision of the employer to cover the costs must be enclosed at the time of enrolment.

The tuition fees for the first and second year of study amount to 3,318.07 euros per year, while 3,981.68 euros are payable for the third year of study. The annual tuition fee can

be paid in two equal instalments, before the start of the even or odd semester. The registration fee for the first year of study is 50.43 euros, and the registration fee for the following years of study is 39.82 euros per year.

The study programme and the Regulations on the Doctoral (PhD) Programme "Maritime Studies" can be found at the webpage of the Doctoral (PhD) Programme "Maritime Studies".

The applicants shall apply on the prescribed Application form also available at the Faculty Doctoral Study Administration Office (Room 305).

The application for the call is attached:

- a certified copy of the diploma of the previous study,
- a certificate of passed exams with a transcript of the grades of all subjects at the previous study,
- a form explaining the research proposal with the written consent of the potential supervisor,
- a letter of recommendation from a university teacher employed in a research-teaching position,
- list of published scientific and professional works,
- the decision of the applicant's higher education institution or institution on the payment of study costs,
- a copy of the contract for employment at the assistant post, concluded with the university,
- the decision of the company or institution on referring the applicant to doctoral studies and paying the study costs,
- CV.

The list of potential supervisors and related research areas can be found below.

The student is obliged to provide the originals of the documents for inspection at the time of enrolment.

All required prescribed forms can be found at the webpage of the Doctoral (PhD) Programme "Maritime Studies".

Annex 1: List of potential supervisors and research areas

Name	Research areas
Saša Aksentijević, PhD	▪ Information security and business continuity in logistics companies ▪ Development of single interfaces (single-window) in the maritime sector ▪ Application of disruptive technologies in logistics
David Brčić, PhD	▪ Risk assessment and their reduction in satellite navigation systems application ▪ Modelling of GNSS positioning deviations ▪ Environmental impacts on the operation and performance of satellite navigation systems with emphasis on natural phenomena ▪ Modelling of ionosphere dynamics and the Total Electron Content ▪ Mitigation of the effects of satellite navigation signals' intentional interference ▪ Alternative PNT methods and technologies
Jasmin Ćelić, PhD	▪ Effects of traffic-related pollution on the environment
Aleksandar Cuculić, PhD	▪ Power flow optimization in hybrid vessel charging systems ▪ Techno economic analysis of renewable sources implementation in nautical marinas ▪ A contribution to increasing the safety of navigation of merchant ships by the use of hybrid propulsion
Borna Debelić, PhD	▪ Possibilities for Improvements and Integration of the Governance System of the Maritime Common Good as a Complex Resource ▪ Open Access to Maritime Common Good as a Competitive Advantage in the Development of the Coastal Economy ▪ Decision-making Mechanisms as the Basis of Integrated Coastal Zone Management
Vlado Frančić, PhD	▪ Systematic maritime traffic management and monitoring ▪ Modelling of maritime traffic flow ▪ Models of improving safety of navigation by applying new technologies ▪ Models of maritime education and training
Neven Grubišić, PhD	▪ Activity based modelling in transport ▪ Multimodal traffic simulations ▪ Vehicle air pollution microsimulation models ▪ CAV - Connected and Automated/Autonomous vehicles ▪ Fleet management and public transport optimization ▪ Port and shipping operation simulation
Renato Ivče, PhD	▪ Protection of Croatian ports of entry of foreign invasive organisms through ballast water ▪ Protection of the underwater part of the vessel's and other crafts' hull with antifouling paints ▪ Maintenance of the hull of a container vessel in modern

Name	Research areas
	conditions of its economic exploitation ▪ Optimal capacities of feeder container vessels ▪ Container ship management and administration from a safety aspect
Alen Jugović, PhD	▪ Identification of elements, defining the concept of development and management of seaports ▪ Structural approach to the development of the green port concept from the aspect of sustainability ▪ Rationalization of maritime passenger traffic ▪ Consumer behaviour in the marina location choice problem
Irena Jurdana, PhD	▪ Communication networks in the ship's systems by using optical technology: ▪ Optical sensor systems for measuring electrical and non-electrical values ▪ Submarine optical networks: construction, safety and protection, the impact on the marine environment, technical and legal aspects ▪ Application of laser systems for detection and ranging in the modern road transportation and maritime sector ▪ Electronic navigation devices based on optical fiber technology ▪ Electronic navigation systems and signal processing ▪ Underwater Wireless Optical Communication ▪ Sustainable real-time maritime communication
Serdjo Kos, PhD	▪ Risk assessment and their reduction in satellite navigation systems application ▪ Modelling of GNSS positioning deviations ▪ Environmental impacts on the operation and performance of satellite navigation systems with emphasis on natural phenomena ▪ Modelling of ionosphere dynamics and the Total Electron Content ▪ Mitigation of the effects of satellite navigation signals' intentional interference ▪ Alternative PNT methods and technologies ▪ Space weather and its impact on GNSS systems ▪ GNSS positioning error budget and statistical methods in satellite navigation ▪ Productivity and energy efficiency of the full container ships ▪ Mathematical modeling of the optimal transport structure of the full container ships ▪ Modeling of the transport process of marine container technology ▪ Optimization of intermodal/multimodal transport ▪ Multimodal transport networks
Predrag Kralj, PhD	▪ Optimization of ship propulsion and auxiliary systems with the aim of reducing fuel consumption and pollutant emissions

Name	Research areas
	▪ Ship auxiliary systems analysis and possibilities to improve exploitation methods ▪ Vapor-compression refrigeration systems operation and maintenance harmful impact on the environment analysis ▪ Ship power plant exergy analysis and possibilities of improvement with absorption refrigeration system implementation
Nikola Lopac, PhD	▪ Application of computer vision in (maritime) transportation ▪ Application of artificial intelligence methods in (maritime) transportation ▪ Estimation of sea state parameters using machine learning ▪ Leveraging machine learning methods for maritime data utilization ▪ Application of digital signal processing methods in maritime systems ▪ Advanced digital processing of underwater images
Lovro Maglić, PhD	▪ Technological and organizational solutions and innovative technologies in navigation management. ▪ Innovative and ecologically acceptable mooring and anchoring systems ▪ 3D model development of underwater structures ▪ Maritime traffic impact on sea and seabed pollution ▪ Workload research in maritime sector
Livia Maglić, PhD	▪ Adaptive port planning ▪ Storage and stacking logistics problems at container terminals ▪ Sustainable marinas ▪ Assessment of crane operator's workload
Đani Mohović, PhD	▪ Model for determining the minimum avoidance distance between vessels in collision courses ▪ Development of avoidance model for autonomous unmanned ships ▪ Risk assessment of the navigation of unmanned autonomous ships ▪ Development of navigation safety monitoring models for yachts and boats
Robert Mohović, PhD	▪ Research of the maritime aspect of the planning and design of ports and waterways in confined areas ▪ Maritime safety of vessels at berth
Ana Perić Hadžić, PhD	▪ Optimization of the logistics service of using autonomous vehicles by the supply chain accessibility model ▪ Public-private partnership models in the port area ▪ Public-private partnership models for the smart city concept and development
Radoslav Radonja, PhD	▪ Exhaust emissions from marine energy systems and their environmental impact ▪ Possibilities of using alternative fuels in maritime transportation

Name	Research areas
	▪ Acidification and eutrophication of the sea
Biserka Rukavina, PhD	▪ Legislative framework of concessions on maritime domain ▪ Liability for damage to the maritime environment ▪ Legal aspects of marine spatial planning ▪ Prevention of pollution by garbage from ships
Boris Sviličić, PhD	▪ Maritime cyber risk security
Edvard Tijan, PhD	▪ Transport digitalization/Maritime transport digitalization/Seaport digitalization ▪ Digital transformation of transport/Digital transformation of maritime transport/Digital transformation of seaports ▪ Information systems in transport/Information systems in maritime transport/Information systems in seaports ▪ Information management in transport/Information management in maritime transport/Information management in seaports ▪ Maritime Single Windows ▪ Port Community Systems ▪ Smart Ports ▪ Hydrogen as a marine fuel
Sanjin Valčić, PhD	▪ Modernization of the Global Maritime Distress and Safety System ▪ Atmospheric impact analysis on digital maritime communication systems ▪ Application of 5G networks in maritime communications ▪ Potential applications of VHF Data Exchange System in maritime domain
Siniša Vilke, PhD	▪ Sustainability of intermodal transport systems ▪ Optimization of intermodal/inland transport corridors ▪ Technological and organizational aspects of urban transport and environment
Goran Vizentin, PhD	▪ Marine environment effect on additively manufactured materials ▪ Recycling of additively manufactured materials in marine environment ▪ Ship fire spread and passenger evacuation in virtual reality
Goran Vukelić, PhD	▪ Weldability of additively manufactured materials in marine environment ▪ Corrosion digital twin ▪ Human-computer interaction in the virtual and augmented reality of a ship engine room
Dražen Žgaljić, PhD	▪ Developing a model for assessing the success potential of maritime transport route or service ▪ Defining the elements and development concept of sustainable small ports
Srđan Žuškin, PhD	▪ Concepts and development possibilities of navigation information systems in the function of increasing safety at sea ▪ Concepts and development possibilities of navigation information systems in the function of environmental protection

Name	Research areas
	▪ Concepts and development possibilities of navigation information systems in the function of increasing Maritime cybersecurity
Mate Barić, PhD	▪ Ship trajectory prediction in width and depth limited fairways ▪ Influence of specific elements in ship to ship interaction during overtaking and head on encounter
Luka Mihanović, PhD	▪ Implementation of Artificial Intelligence in mine warfare ▪ Optimization of the utilization of Autonomous Underwater Vehicles to protect underwater. ▪ Enhancement of the Underwater Situational Awareness in the Sea Lines of Communication, ports, and port approaches of the enclosed sea. ▪ Crisis management model in the Adriatic Sea ▪ Underwater Mine Countermeasures in underwater safety ▪ Evaluation of the mine warfare in the Sea (in Sea Denial) ▪ The development / improvement of EOD (Explosive Ordnance Disposal) Capabilities as part of underwater security of the enclosed sea
Josip Orović, PhD	▪ Optimization of ship propulsion systems ▪ Analysis of faults and failures in ship propulsion systems
Luka Vukić, PhD	▪ Sustainability of the maritime transport system