INSTRUCTIONS

for the enrolment in the Postgraduate Doctoral (PhD) Programme "Maritime Studies" in the academic year 2022/2023

Applications are invited for the enrolment of 20 (twenty-five) students; 8 (eight) of which may enrol as full-time students, and 12 (twelve) as part-time students.

Citizens of the Republic of Croatia, foreign citizens as well as persons with no citizenship have, under the same conditions, the right to apply for the enrolment if:

1. They have completed the graduate university study in technical sciences (i.e. acquired 300 ECTS credits, the undergraduate study included), or exceptionally, they have completed the graduate or integrated study in other scientific areas. In latter case, applications will be required to complete supplemental courses. If the Commission for Science and Postgraduate Doctoral (PhD) Programme "Maritime Studies" ascertains that an applicant requires additional knowledge in traffic and transport technology, it will submit a proposal to the Faculty Council, which shall then pass a decision on the required supplemental courses, which can be awarded a maximum of 60 ECTS. All costs incurred for supplemental subjects shall be borne by the applicant,

2. They have obtained an academic degree of Master of Sciences (M.Sc.) according to the study programs in force before the 2005 higher educational reform. The earned academic degree of Master of Sciences enables the applicant to enrol in the postgraduate study starting with up to 60 ECTS credits. The exact number of ECTS credits granted to applicants as an equivalent to the earned degree of Master of Sciences is prescribed by the Commission for Science and Postgraduate Doctoral (PhD) Programme "Maritime Studies" for each applicant individually. The applicant cannot be exempted from obligations of acquiring ECTS credits pertaining to the PhD thesis,

3. They have completed an undergraduate university study in the field of traffic and transport technology according to the study programs in force before the 2005 higher educational reform or an undergraduate study in other scientific areas in which case applications will be required to complete supplemental courses. If the Commission for Science and Postgraduate Doctoral (PhD) Programme "Maritime Studies" ascertains that an applicant requires additional knowledge in traffic and transport technology, it will submit a proposal to the Faculty Council, which shall then pass a decision on the required supplemental courses, which can be awarded a maximum of 60 ECTS. All costs incurred for supplemental subjects shall be borne by the applicant.

Preference of enrolment is given to applicants who have completed postgraduate scientific or postgraduate specialist studies, as well as to those applicants who have already gained certain experience in scientific research (attendance and presentations at scientific

conferences, publication of papers in conference proceedings and/or scientific journals, engagement on research projects, etc.)

The postgraduate university study lasts six (6) semesters.

The full price cost of the study amounts to HRK 80,000.00. If the tuition fee is paid by the company or institution the applicant is working at, a relevant decision on the tuition fee payment must be presented at enrolment.

The first-year study fee in the academic year 2022/2023 amounts to HRK 25,000.00. This amount can be paid in two equal instalments, at the beginning of the first and the second semester, respectively.

The latest Study program and the Regulations on the Postgraduate Doctoral (PhD) Programme "Maritime Studies" are available on the website of the Faculty:

https://www.pfri.uniri.hr/web/en/postgradute_doctoral_education.php

Applicants applying for the study shall fill in a prescribed Application form available at the Faculty website and the Faculty postgraduate university study office (Room 305).

Applicants shall submit the following documents:

- certified copy of the university degree (Diploma),
- certified list of all previously attended courses with grades and the obtained average grade,
- the rationale of the preferred area of research (prescribed form),
- consent of a potential mentor/co-mentor (prescribed form),
- letter of recommendation from a university teacher with the scientific-teaching vocation,
- list of published research and/or professional papers,
- biography.

A list of potential mentors and related research topics can be found at the end of this document.

The student is obliged to submit the original documents for consideration at the enrolment.

All required prescribed forms can be found at the *Programme* website:

https://www.pfri.uniri.hr/web/en/forms.php

The enrolment rank-list is formed by ranking full-time students first, followed by part-time students.

Attachment 1: List of potential mentors and research topics

Name	Research topics
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 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

Name	Research topics
	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 image processing and deep learning algorithms for maritime object recognition ▪ Application of underwater signal and image processing methods ▪ Application of time-frequency transformations and statistical analysis of signals from maritime systems ▪ Application of intersection of confidence intervals methods for denoising signals from maritime systems
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
Robert Mohović, PhD	▪ Research of the maritime aspect of the planning and design of ports and waterways in confined areas
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 ▪ Acidification and eutrophication of the sea
Boris Sviličić, PhD	▪ Maritime cyber risk security
Edvard Tijan, PhD	▪ Transport digitalization/Maritime transport digitalization/Seaport digitalization

Name	Research topics
	▪ 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
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
Goran Vukelić, PhD	▪ Marine environment effect on mechanical properties of modern (additively manufactured/3D printed and smart) materials ▪ Weldability of additively manufactured metals ▪ Modelling and simulation of passenger evacuation
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 ▪ Concepts and development possibilities of navigation information systems in the function of increasing Maritime cybersecurity
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
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

Name	Research topics
	▪ 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