

## INNOVAMARE PROJECT

Blue technology - Developing innovative technologies for sustainability of Adriatic Sea

WP4 – Creation and establishment of innovation ecosystem model for underwater robotics and sensors

### D4.3.3. InnovaMare Academy report

Partner responsible: Croatian Chamber of Economy

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# InnovaMare

Blue technology -  
Developing innovative technologies  
for sustainability of Adriatic Sea



***DIVE INTO THE DEPTH  
OF OPPORTUNITIES***

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## Introduction - objectives of the InnovaMare Academy

Innovamare Academy was organized with the objective to provide services aimed for preparatory and upskilling companies, experts, employees, and other interested stakeholders in the field of marine technologies and sectors of blue economy by providing online modules, auditorium meetings, access to water, robots, and related tech through several topics.

In the Academy, stakeholders got insights and participated in trials/demos of potential application in marine technologies that are innovative and up to date. In this way, they were enhancing skills and competences in application of blue technologies in blue economy sectors. In Innovamare academy set up pilot courses that allowed companies to show real case applications of marine technologies and their view on future possibilities and at the same time, academia gave their perspective on future characteristics, applications, and challenges of marine technologies in blue economy sectors.

To achieve lower environmental impact, the technologist needs to understand how this ecosystem is working and what the main challenges are seen by a marine biologist. It is crucial to have this cross-sectoral cooperation so we can have the right technologies for real challenges.

Besides lectures, we had real demonstrations in our testing facilities as well as challenge competitions during lectures that allowed participants to showcase their creativity and knowledge in solving environmental challenges with marine technologies.

Venue of the InnovaMare Academy was The Polytechnic of Šibenik, Trg Andrije Hebranga 11. The Academy was held from May 8th-12th of May 2023.

Duration of the lectures was from Monday until Thursday from 10.00-14.00 with short breaks between lectures and the lunch break at 14.00. On Friday, duration was from 10.00-16.00 since students have practical part during the demonstrations and as well ceremonial awarding of the certification.

Max range of 35 participants was planned. We have invited students from 12 institutions, and we had 14 students participating from the University North to the departments of Electrical engineering and mechanical engineering, Faculty of Electrical Engineering and Computing and University of Zadar and one PhD student from Ruđer Bošković Institute attended the Academy.

## Insight of the InnovaMare Academy

The topics of the Academy covered the area of digital and green transformation of the blue economy and the use of marine technologies as follows:

1. Use of ocean resources in a responsible and sustainable manner while preserving the health of marine ecosystems. The above may include topics such as marine conservation, sustainable fishing practices, renewable ocean energy, development of sustainable tourism in coastal areas, and the like. A sustainable blue economy workshop will be interdisciplinary, covering topics from marine biology, oceanography, and environmental science, to economics, business, and sustainable development policies.
2. The application of marine technologies in the blue economy sectors for more efficient and sustainable functioning of the blue economy sector.

Examples of marine technologies and areas of their application in blue economy sectors are:

- Autonomous surface vehicles (ASV) and unmanned surface vehicles (USV); the above refers to robotic boats that can be used for a variety of tasks, such as ocean exploration, monitoring and mapping.
- Underwater sailboats; the above refers to autonomous underwater vehicles that use changes in buoyancy to move up and down through the water column, allowing them to cover large areas while collecting data on temperature, salinity, and other oceanographic parameters.
- Ocean energy; the above includes increasingly advanced and efficient technologies that utilize the energy of ocean currents, tides, and waves, and which enable the production of electricity from these sources
- Maritime robotics; includes advances in the design and construction of robots for deep-sea exploration, monitoring and maintenance of marine facilities.
- Blue carbon; refers to methods of sequestering carbon dioxide from the atmosphere in coastal ecosystems such as mangroves, salt marshes and sea grasses.
- Advanced recording and sensor technologies; they refer to technologies such as LiDAR, imaging spectroscopy, and synthetic aperture sonar that are used to create high-resolution maps of the seabed and detect underwater objects with high accuracy.
- Smart water monitoring systems; include sensors, IoT-enabled monitoring and control systems deployed on the coast and in estuaries to improve understanding of water quality and to manage and mitigate the impacts of coastal pollution.

## Biography and lectures of lecturers at the InnovaMare Academy

**Antonio Vasilijević** - is a research project manager at the Applied Underwater Robotics Laboratory (AURLab), Norwegian University of Science and Technology where he is responsible for full lifecycle of research projects, from securing funds, implementation, delivering research results and reporting. He is also involved on operational and decisional level in operation, maintenance, and further development of the Laboratory research infrastructure. Previously, Antonio acted as a Senior and Leading Researcher at the Laboratory of Underwater Systems and Technologies at University of Zagreb Croatia where he was project manager or key researcher in number of projects related to marine robotics, mainly funded by European FP7 and Horizon programs. Before returning to academia in 2009, he worked in various engineering and senior positions in marine industry. From 2010 to 2019 Antonio was a Chairman of the Technical Committee of the International Interdisciplinary Conference of Marine Robotics and Applications "Breaking the Surface". He is an author and co-author of more than 50 papers published in journals and at conference proceedings. His research interests cover broad area of marine robotics or marine technology in general and their applications.

During the InnovaMare Academy, Mr. Vasilijević held lectures on Applications of Marine Robotics, Use of maritime robotics and sensors in monitoring activities in seas and oceans and Subsea Residency.

**Andrea Saiani** - MBA in SMEs development at IULM (Milan) and Master's in leadership at MIT (Boston), is an innovation advocate and techno entrepreneur with a green mission at heart. He is an entrepreneur-in-residence mentor for the Innovation and Entrepreneurship Course of EIT-Digital at the University of Trento, Italy, and a Senior Mentor at Creative Valley-Station F in Paris. He is CEO and Co-Founder of Witted Srl, a leading green tech company on the autonomous monitoring of coastal marine biodiversity. Currently he is CEO @Witted Srl.

Mr. Saiani held lectures in the first day of the Academy on the topic Digital Transformation in The Blue Industry. After the lecture, students had a group assignment.

**Frane Urem** - graduated from the study of electrical engineering, majoring in automatics with excellent success and obtained the professional title of graduate electrical engineer. He received his doctorate in the field of computing at the University of Zagreb, Faculty of Electrical Engineering and Computing in 2012 with the topic Reliability modeling of software support for company resource management. He has published more than 30 scientific and professional papers in international peer-reviewed journals and a number of industry certificates (Oracle, Cisco, Microsoft, Fortinet). He is a lecturer at Oracle education programs for teachers from Central and Eastern European countries (Lithuania, Latvia, Estonia, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Bosnia and Herzegovina). Currently, he is Vice Dean for Business at the Polytechnic in Šibenik and teaches Objective oriented programming, Selected topics and technologies from the World Wide Web, Design and analysis of information systems, Business

information systems, Software engineering, Intellectual property and information systems, Introduction to web technologies, Economics of information systems.

At the lectures held by Mr. Urem, the students started with the Introduction to Artificial Intelligence in the Blue Economy and learned more about Classification and its applications, Regression and its applications, Clustering and its applications and Introduction to deep learning. After each of lectures, students had a group assignment.

**Marija Stupalo** - CEO managing a regional leader in maintenance of industrial facilities. Cofounder of MARAL TECHNOLOGIES, a startup company providing innovative solutions for mariculture. SDA Bocconi Global Executive MBA graduate with fluency in 5 languages. Currently, she is CEO of a company that offers complete solutions for the maintenance and repair of industrial plants in various sectors such as energy, iron and steel production, mining, production of building materials, construction, sea and river ports, agricultural and food industry, and utility companies. In over 25 years of existence, we have delivered more than 300 successful large works to domestic and foreign clients.

At her lecturers, students were given the opportunity to learn more about financing and life cycle of innovation in blue economy sectors – from idea to the final product. Mrs. Stupalo and her company also participated at the last day of the Academy during the demonstration of their technologies. They presented their innovative product - ROTO SPREADER that is used for feeding fish in mariculture.

**Josip Rukavina** - engineer but with extensive IT knowledge. Passionate about creating innovative solutions in business using the latest technology to achieve better efficiency and optimization. In his current projects he is combining different photo and video equipment using drones and ROV's. Also keeping up with all exponential trends in 3D modeling. These experiences are helpful in creation of authentic content, thinking beyond the usual, routinized-established business processes, bringing together all the knowledge from various, seemingly unrelated fields, which is his best quality in business. Current Occupation: Asset Management, UAV Precision Flying, Underwater Inspections, Digital Twin.

At the InnovaMare Academy, Mr. Rukavina has presented Analysis of Underwater and Coastal Structures using Machine Learning to the students. Mr. Rukavina and his company also participated at the last day of the Academy during the demonstration of their technologies presenting 15m long carbon pole, a unique methodology for the coastal area of shallow water that greatly facilitates the job of managing assets under water because it always enables a realistic representation of the situation.

During the demonstration day, Faculty of Electrical Engineering and Computing presented a drifter used for vertical profiling in the sea. This drifter, changing its volume by moving the piston at the bottom, achieves a difference in buoyancy and thus realizes the possibility of vertical movement in the water. The drifter in this particular application is for acoustic imaging and fish detection, but it can be used for other sensors. Company Geomar presented multibeam echosounder system Teledyne RESON SeaBat T20-P and mini ROV Deep Trekker DTG3.

## Call for expressions of interest to participate in the Innovamare Academy

Call for expressions of interest to participate in the InnovaMare Academy has been sent to the Universities and educational institutions to Italy and Croatia.

In Italy to the University of Trieste, University of Padua, The National Institute of Oceanography and Applied Geophysics – OGS since they have Special higher education programmes Blue Skills: initiatives for a sustainable blue economy, to the company Witted whose CEO is lecturer at the University' CA' Foscari Venezia and to Agenzia Regionale per la Tecnologia e l'Innovazione ARTI as they have strong cooperation with the Politecnico di Bari.

In Croatia, the call was sent to the University of Dubrovnik, Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, University North to the departments of Electrical engineering and mechanical engineering, Polytechnic of Šibenik and Faculty of Electrical Engineering and Computing, University of Zadar, and Ruđer Bošković Institute.

We had 14 students attending the Academy from the University North to the departments of Electrical engineering and mechanical engineering, Faculty of Electrical Engineering and Computing and University of Zadar and one PhD student from Ruđer Bošković Institute attended the Academy.

Call for expression of interest:

Dear,

*Attached is the Innovamare Academy program that you can share with your students. Bed and breakfast is organized for students on the campus at the Fortress of St. Ivan (more information is available in the brochure that we send as an attachment), and lunch is organized after the lecture at the Polytechnic, where the lectures were also organized. On Friday, 12.5. students will participate in the final conference of the InnovaMare strategic project where they will be awarded certificates. We are sending the conference program as an attachment.*

*In the continuation of the email, we repeat the earlier information about the Innovamare Academy and remind you that applications are still open.*

*We are pleased to inform you that from May 8th to May 12th, the InnovaMare Academy will be held in Šibenik (Croatia). The InnovaMare Academy is a five-day educational workshop on topics related to digital and green transformation of the blue economy and the application of marine technologies with focus on robotics and sensors. The InnovaMare Academy is the culmination of a strategic project funded by the Italy-Croatia cross-border program. More information about the project can be found at the [link](#).*

*During 5 days, renowned lecturers will hold 5 educational workshops in English for a total duration of 20 hours, and participants coming outside of Šibenik will be provided with free accommodation, as well as drinks and snacks for the duration of the workshops.*



*By participating in the Academy, attendees will gain valuable knowledge, competencies, and skills in the field of digital and green transformation of the blue economy and the use of marine technologies, which are highly valuable given the dynamics of circumstances and the needs of the global economy. Topics covered will include ocean conservation, sustainable fishing practices, ocean renewable energy, sustainable tourism development in coastal areas, marine biology, oceanography and environmental science, autonomous and unmanned surface vehicles, underwater gliders, ocean energy, marine robotics, and more.*

*In addition to gaining valuable knowledge, this will also be an exceptional opportunity for all participants to network and make new friends in a relaxed and pleasant environment offered by beautiful Šibenik. We hereby invite all interested students to send their application through [THIS LINK](#).*

**Applications are open until April 30th.**

*Additional information:*

- *Participation in the workshops is free of charge.*
- *Participants cover the cost of their travel expenses to the Šibenik.*
- *Applying expresses of interest in participation is not a guarantee of participation.*
- *The number of places is limited, and participants will be enrolled according to motivation and experience defined in application.*
- *It is not possible to apply for a shorter duration; registered participants are required to participate in all workshops from May 8th to May 12th.*
- *All registered students will be contacted no later than May 2nd, 2023.*

*We look forward to seeing you in Šibenik!*

*Best regards,*

*The InnovaMare Academy Organizing Committee*

## Students' expressions of interest to participate in the Innovamare Academy

<b>Application Innovamare Academy : Entry # 202</b>
<b>Name</b> Marija Parać
<b>Name of the University/Faculty:</b> Ruđer Bošković Institute
<b>Year of study:</b> -
<b>University/faculty programme:</b> -
<b>Contact email</b> <a href="mailto:mparac@irb.hr">mparac@irb.hr</a>
<b>Contact mobile phone:</b> +385997896781
<b>Shortly explain your motivation to join this programme:</b>  My motivation for joining this programme stems from a desire to learn about new opportunities for entrepreneurship and innovation in the maritime sector, to explore additional ways to reduce the environmental impact of human activities on the oceans. Additionally, I think this programme will provide me with knowledge and tools necessary for the development of my academic career, as well as to make informed decisions about my personal and professional involvement in efforts to promote sustainable blue economy.
<b>Previous experience (participation in projects, internships etc):</b>  currently: Professional Associate at Ruđer Bošković Institute - Division for Marine and Environmental Research, Laboratory for physical chemistry of traces. Main research interest: Microplastics in estuarine and marine ecosystems.  - Master's thesis at Ruđer Bošković Institute - project "Antibiotic resistance in wastewater treatment plants in Croatia - emphasis on extended spectrum beta-lactamases and carbapenemases (WasteCare). - National observer by ICCAT supervision on tugboat vessels in the fishing season of bluefin tuna (Croatia) - Erasmus+ Internship at University of Maribor, Faculty of Agriculture and Life Sciences. Analytical Chemistry - Project - International Aquatic Ecosystem Analysis: Invasive Species in the Guadiana River basin. How to minimize the problem? at AERES University of Applied Sciences Almere - Netherlands

**Application Innovamare Academy : Entry # 201**

**Name**

Enni Martina Fudurić

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**Name of the University/Faculty:**

University of Zadar

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**Year of study:**

4. or 1. year of graduate study

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**University/faculty programme:**

Održivo upravljanje vodenim ekosustavima / Sustainable management of aquatic ecosystems

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**Contact email**

[ennimartina@gmail.com](mailto:ennimartina@gmail.com)

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**Contact mobile phone:**

091 732 3307

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**Shortly explain your motivation to join this programme:**

I want to gain new knowledge in this area that could help me in my future employment.

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**Application Innovamare Academy : Entry # 199**

**Name**

Anastasiia Drozhzhyna

**Name of the University/Faculty:**

Polytechnic of Sibenik

**Year of study:**

2

**University/faculty programme:**

Computer Science

**Contact email**

[anastasiia.drozhzhyna03@gmail.com](mailto:anastasiia.drozhzhyna03@gmail.com)

**Contact mobile phone:**

+40720324654

**Application Innovamare Academy : Entry # 198**

**Name**

Dominik Erić

**Name of the University/Faculty:**

University of Zagreb, Faculty of Electrical Engineering and Computing

**Year of study:**

5

**University/faculty programme:**

Electric Machines, Drives, and Automation

**Contact email**

[de51661@fer.hr](mailto:de51661@fer.hr)

**Contact mobile phone:**

+385993664645

**Shortly explain your motivation to join this programme:**

As a current postgraduate student in the field of mechatronics, I am enthusiastic to pursue my interest in marine science by engaging in your innovative and progressive program.

My academic obligations have precluded me from pursuing a prolonged absence from my university thus far. However, I am now presented with the necessary time and resources to broaden my perspectives and acquire new insights into various scientific domains.

The Adriatic Sea is renowned for its pristine waters and breathtaking scenery, and as the world grapples with an upsurge in oceanic waste and pollution, I am disheartened by the prospect of such calamities befalling Croatia's natural resources. Thus, I am keen to participate in efforts to prevent such environmental catastrophes.

I strongly believe that throughout your workshop, I will obtain the necessary knowledge and answers needed to begin my contribution towards this cause. Moreover, I regard networking as a valuable opportunity to establish meaningful connections, exchange information and ideas with fellow participants during the workshop, and enrich my professional pursuits.

**Previous experience (participation in projects, internships etc):**

I would be honored to participate in your project, as my experience in marine science projects and internships is limited. As a postgraduate student focusing on the Mechatronic design of a self-balancing three-dimensional inertia wheel pendulum for my thesis, I have developed a sound understanding of designing, evaluating, and analyzing various mechatronic constructions. My academic program has equipped me with the ability to operate various types of motors, controllers, and sensors, and I possess a good grasp of control theory, including open/closed-loop control, PID control, pre-control, LQR-control, etc. Furthermore, my most rewarding experience in marine robotics was during a faculty course on Marine Robotics, where I achieved full marks. This course focused on navigation, guidance, and control of autonomous vessels (underwater and surface), as an upgrade on the topics of acoustic communication, sensors and mathematical modelling that were covered in the first part of the semester. The course was a brilliant demonstration of practical problems and inconveniences when driving and maneuvering an autonomous vessel, and it inspired me to learn more about marine science and robotics.

**If you have any special requirements, please add them here:**

I do not have any special requirements.

**Application Innovamare Academy : Entry # 197**

**Name**

Pablo Paić

**Name of the University/Faculty:**

Sveučilište u Zadru

**Year of study:**

1

**University/faculty programme:**

Underwater science and tehnology

**Contact email**

[paicpablo@gmail.com](mailto:paicpablo@gmail.com)

**Contact mobile phone:**

0994844684

**Shortly explain your motivation to join this programme:**

Just curious about what you have to say in lectures

**Previous experience (participation in projects, internships etc):**

None

**If you have any special requirements, please add them here:**

Sibenik is my hometown So i will be staying there at my own place.

**Application Innovamare Academy : Entry # 195**

**Name**

Jan Laszowski

**Name of the University/Faculty:**

University of Zadar

**Year of study:**

3rd

**University/faculty programme:**

Podvodne znanosti i tehnologije

**Contact email**

[janlaszowski1@gmail.com](mailto:janlaszowski1@gmail.com)

**Contact mobile phone:**

0992537790

**Application Innovamare Academy : Entry # 194**

**Name**

Josip Knežević

**Name of the University/Faculty:**

University North

**Year of study:**

3

**University/faculty programme:**

Mechatronics

**Contact email**

[joknezevic@unin.hr](mailto:joknezevic@unin.hr)

**Contact mobile phone:**

0915921354

**Shortly explain your motivation to join this programme:**

to get to know people and their ideas and to search for things that will benefit me in the future

**Previous experience (participation in projects, internships etc):**

Nothing



**Application Innovamare Academy : Entry # 193**

**Name**

Patrik Dvorski

**Name of the University/Faculty:**

University North

**Year of study:**

3rd Year

**University/faculty programme:**

Mechatronics

**Contact email**

[padvorski@unin.hr](mailto:padvorski@unin.hr)

**Contact mobile phone:**

0917301913

**Shortly explain your motivation to join this programme:**

I really like the idea of monitoring the sea through various parameters with all this technology that is available to us because even today we don't know exactly what is happening in most parts of the sea. While studying robots and the main principles of robotics, I learned that as the environment is more controlled and predictable will result in robots being more efficient and successful in performing tasks. Putting them in a very unpredictable environment like the sea creates a lot of challenges that need to be overcome for them to work most effectively. This is something I can't understand but it motivates me to figure out how is it possible.

**Previous experience (participation in projects, internships etc):**

I don't have much experience with projects because there wasn't any field that interested me except this one.

**Application Innovamare Academy : Entry # 192**

**Name**

Maja Radovanović

**Name of the University/Faculty:**

University North

**Year of study:**

3

**University/faculty programme:**

Mechatronics

**Contact email**

[rmaja2020@gmail.com](mailto:rmaja2020@gmail.com)

**Contact mobile phone:**

0913593885

**Shortly explain your motivation to join this programme:**

My motivation to join this programme is my interest in robotics and sensors.

**Previous experience (participation in projects, internships etc):**

I participated in projects called Kiteens, Pyxie Dust and Wonderland.

**Application Innovamare Academy : Entry # 191**

**Name**

Marko Švaco

**Name of the University/Faculty:**

Sveučilište Sjever , Varaždin

**Year of study:**

2

**University/faculty programme:**

Electrical engineering majoring in automation

**Contact email**

[marsvaco@unin.hr](mailto:marsvaco@unin.hr)

**Contact mobile phone:**

091 556 5836

**Shortly explain your motivation to join this programme:**

To meet new people and new knowledge about the program. Expand knowledge in that area.

**Previous experience (participation in projects, internships etc):**

Durđevac High School, gained experience in robotics and programming.  
Received a certificate for basic knowledge of arduino.

**Application Innovamare Academy : Entry # 190**

**Name**

Sebastijan Vincek

**Name of the University/Faculty:**

University North(Sveučilište Sjever)

**Year of study:**

2

**University/faculty programme:**

Electrical engineering/Elektrotehnika

**Contact email**

[sevincek@unin.hr](mailto:sevincek@unin.hr)

**Contact mobile phone:**

0989060049

**Shortly explain your motivation to join this programme:**

I have big interest in robotics and want to learn more about it. I look upon meeting new acquaintances in my field and talking about topics that interest me.

**Previous experience (participation in projects, internships etc):**

Long internship in company specialized in electrical design, project realization, start-up & commissioning, maintenance and service.

Took robotics class in highschool and worked on Arduino projects.

**Application Innovamare Academy : Entry # 189**

**Name**

Robert Grmovšek

**Name of the University/Faculty:**

Sveučilište Sjever/ University North

**Year of study:**

2.

**University/faculty programme:**

Elektrotehnika/ electrical engineering

**Contact email**

[rogrmovsek@unin.hr](mailto:rogrmovsek@unin.hr)

**Contact mobile phone:**

0995721690

**Shortly explain your motivation to join this programme:**

I want to be more competitive in my field of study and work. I think this programme will help me in understanding of robotics and automation, who knows maybe I move to work and live at coastal cities. Besides I believe this is a great opportunity to meet new people, friends, colleagues etc.

**Previous experience (participation in projects, internships etc):**

Winter school of informatics in Secondary School Krapina, 2018., 2019. (advanced c++), (arduino Uno)

**Application Innovamare Academy : Entry # 175**

**Name**

Lovro Božičević

**Name of the University/Faculty:**

University of Zagreb/Faculty of Electrical Engineering and Computing

**Year of study:**

3. (third)

**University/faculty programme:**

Electrical Engineering/Electromechanical Engineering and Automation

**Contact email**

[lovro.bozicevic@fer.hr](mailto:lovro.bozicevic@fer.hr)

**Contact mobile phone:**

+385997881134

**Shortly explain your motivation to join this programme:**

I have an immense love for nature and I am looking for a way to connect it with my work as an electrical engineer. It seems to me like this project would open my eyes as to how I can positively affect the health of our seas, oceans and shores and all the wildlife that finds its home there. As I specialise in mechatronics, electrical drives and control systems I find that, with my skill set, I could hit my stride in the area of naval robotics and renewable energy systems. I also look forward to the networking part of this project because as students we don't often get to hear about projects of this theme and the people who participate in them.

**Previous experience (participation in projects, internships etc):**

Unfortunately none in this particular area. I am currently in the process of writing my bachelor thesis and have worked on projects in the field of mechatronic design as a part of my bachelor degree. I was a part of a team behind the mechatronic design of a microscopic table used in a spectrometer. Through my studies I have also learned about embedded systems, PLC programming, control systems and electronic circuits.

**Application Innovamare Academy : Entry # 174**

**Name**

Andrija Peršun

**Name of the University/Faculty:**

FER

**Year of study:**

3rd

**University/faculty programme:**

Computing

**Contact email**

[andro.persun@gmail.com](mailto:andro.persun@gmail.com)

**Contact mobile phone:**

0989179577

**Shortly explain your motivation to join this programme:**

I am passionate about reducing our carbon footprint as much as possible and am quite aware of the pollution caused by marine transportation. I am motivated to learn more about the situation as well as the new technologies that can help reduce some of the impact. With the seaside being one of Croatia's greatest assets, it's riveting to see prospective inventions in this area and I'm excited to learn more about it. When I applied to this faculty I never knew how much of an impact us tech guys can have on the world. I want to work towards a brighter future and opportunities like this are vital learning platforms to direct people like myself in doing what you love while also working toward a good cause.

**Previous experience (participation in projects, internships etc):**

I worked as a junior embedded software developer in Xylon, a company that manufactures car systems with sensors and cameras for some of world's most renowned car manufacturers. I also volunteered at Erasmus Student Network Zagreb, doing work regarding exchange students and foreigners working in Zagreb. Throughout my college years I was part of three large projects, designing a website, programming a VST plugin and designing a VU meter in the form of a PLC circuit board. Together with my family I run a family farm.

**Application Innovamare Academy : Entry # 173**

**Name**

Dina Zalović

**Name of the University/Faculty:**

University of Zadar

**Year of study:**

3

**University/faculty programme:**

Underwater Science and Technologies

**Contact email**

[dina.zalovic@gmail.com](mailto:dina.zalovic@gmail.com)

**Contact mobile phone:**

0955838411

**Shortly explain your motivation to join this programme:**

My main motivation to join this programme is to expand knowledge about sustainable practices and renewable energy. I'm a bachelor of public administration who works in tourism and a student of Underwater Science and Technologies at University of Zadar. General interests of mine include ocean conservation, ocean renewable energy, sustainable tourism development in coastal areas, marine biology and lately, autonomous marine vehicles. I'm passionate about acquiring new knowledge and opportunities. In addition to above, as I passed the course and obtained a certificate for a Project leader financed from EU funds, I am always interested for the application of projects that include above stated interests through EU funding. I see this programme as a great opportunity for personal and professional growth.

**Previous experience (participation in projects, internships etc):**

As an employee in a private company which main scope of activities are hospitality and tourism I've participated in application and implementation of two EU funded projects from the programme Competitiveness of tourism economy 2022 (cro. "Konkurentnost turističkog gospodarstva 2022") and National plan of recovery and resilience 2023 (cro. "Nacionalni plan oporavka i otpornosti 2023"). My roles in those projects were Project leader and Administrative Associate where I've followed and handled the whole process of application and implementation.

The projects included digital and sustainable energy transformation in a company, including: E-charging station; solar panels; energy efficient lightning; replacement of water devices with ones in first two classes of efficiency by EU Water Label etc.



**Application Innovamare Academy : Entry # 172**

**Name**

Dora Kralj

**Name of the University/Faculty:**

Sveučilište u Zadru

**Year of study:**

1. year graduate study

**University/faculty programme:**

Sustainable management of water ecosystems

**Contact email**

[kraljdora20@gmail.com](mailto:kraljdora20@gmail.com)

**Contact mobile phone:**

0919269705

**Shortly explain your motivation to join this programme:**

As a student of Underwater science and technology I was interested in expanding further knowledge in the field of ecology and management of aquatic ecosystems. My interest was focused on the preservation of Croatian freshwater ecosystems and their proper management. In my 3rd year I participated in Erasmus+ Blended Intensive Programme: "Multi-Spectral Imaging and System Analysis: tools for smart water management, Sentinel-2 MSI for water quality assessment" in Portugal, where I gained additional knowledge and skills, and I think that every opportunity should be seized. By attending this 5-day program I would gain more knowledge and that would help me to develop, in addition to my career, as a person. International cooperation projects like this help students in professional development and personal cultural progress, encourage cooperation with people from different countries and make us more independent individuals and good collaborators.

**Previous experience (participation in projects, internships etc):**

I participated in Erasmus+ Blended Intensive Programme: "Multi-Spectral Imaging and System Analysis: tools for smart water management, Sentinel-2 MSI for water quality assessment" in Portugal. That was my professional practice, but in addition to it I also did a professional practice in the field of aquaculture at the farm in Lamjana, which is one of the farms owned by Cromaris d.d..

## Acceptance letter to students to the InnovaMare Academy

Dear participant of Innovamare Academy,

We are delighted to inform you that your **application for Innovamare Academy has been accepted!**

Congratulations on being selected as one of the few candidates to attend our academy. Your application stood out among many others, and we believe that you have the potential to excel in our program.

We look forward to welcoming you to our campus and working with you to achieve your academic and personal goals.

- **Bed and breakfast** are organized for students on the **campus at the Fortress of St. Ivan, Put Tanaje 29, 22000, Šibenik** (more information is available in the brochure that we send as an attachment) – **check in is possible from Sunday 7th of May from 2PM and check -out is on May 12th until 10AM.**  
**Breakfast is organized from 8-9,30 AM at the campus.** Rooms in campus have 4 beds.
- Campus and Polytechnic of Šibenik are **20 minutes' walk distance.**
- **Lectures will be held in Polytechnic of Šibenik, Hall E, Trg Andrije Hebranga 11, 22000, Šibenik.**
- **Lunch is organized after the lecture at 2PM at the Polytechnic.**
- **On Friday, May 12th** you will participate in the **final conference of the InnovaMare strategic project** where you will be awarded certificates. We are sending the conference program as an attachment.

In the continuation of the email, we repeat the earlier information about the Innovamare Academy. Attached is the Innovamare Academy program.

As part of the InnovaMare strategic project financed from the Italy-Croatia cross-border cooperation program, the InnovaMare Academy is being organized as a result of project activities. You can find more information about the project at the link: <https://www.italy-croatia.eu/web/innovamare>

The academy will be held from **May 8th to 12th in Šibenik (Croatia)** as a five-day educational workshop on topics related to the **digital and green transformation of the blue economy and the application of maritime technologies with a focus on robotics and sensors.**

Over the course of 5 days, renowned lecturers will hold educational workshops in English for a total duration of 20 hours, and participants coming from outside Šibenik will be provided with free accommodation, as well as drinks and snacks for the duration of the workshops.

By participating in the Academy, participants will acquire valuable knowledge, competences, and skills in the field of digital and green transformation of the blue economy and the use of maritime technologies. Topics covered will include ocean conservation, sustainable fishing practices, renewable ocean energy, sustainable coastal tourism development, marine biology, oceanography and environmental science,



*autonomous and unmanned surface vehicles, underwater gliders, ocean energy, marine robotics and more.*

*In order to improve and better prepare for our next editions, we are asking you to [on questionnaire until Friday, 5th of May.](#)*

***If you have any additional questions, please, let us know.***

*Once again, congratulations on your acceptance, and we wish you all the best in your academic endeavors.*

*We look forward seeing you in Šibenik!  
Sincerely,*

*The organizing committee of the InnovaMare Academy*



## Thank you note to students of the InnovaMare Academy

*Dear students,*

*Thank you for your participation and attendance at the InnovaMare Academy.*

*The InnovaMare Academy is the pinnacle of the InnovaMare strategic project, and through 5 educational workshops in English, topics related to the digital and green transformation of the blue economy and the application of maritime technologies with a focus on robotics and sensors were covered.*

*It was our pleasure to have you as first-generation participants, pioneers of the InnovaMare Academy.*

*We thank you for finding time in your student schedule and responding to our call for additional professional education. We believe that in the future the InnovaMare Academy will become an important place in education in the field of marine technologies and innovations and will contribute to the development and education of new young professionals. We hope that you are satisfied with the acquired knowledge, with expert lecturers and with the organization of the academy itself.*

*Below I am sending you a link with a survey <https://forms.gle/AFqa93cgnypo3SZh6> and please fill it out so that we can get your feedback and improve the lectures and the organization of the academy.*

*This was the first year for all of us and there was a total of 14 participants from Croatia. Below is a link from the final conference of the InnovaMare project, where you were ceremoniously awarded certificates of completion of the academy. Feel free to download the photos you want: InnovaMare Conference by Valerio Baranović ([pixieset.com](https://www.pixieset.com)). We believe that the academy was also a meeting place for everyone and that it will be a starting point for future collaborations and opportunities.*

*We are sending the presentations from the lectures as an attachment.*

## Certificate for the InnovaMare Academy participants



## Questionnaire before the InnovaMare Academy

### What motivated you to enroll in InnovaMare Academy?

#### 4 responses

- General interest to learn more about Marine Science.
- The promise of learning about new technologies and their application in the maritime industries, sustainable growth and ecological aspects.
- My interest in robotics and sensors motivated me to enroll.
- Acquiring new and valuable knowledge about sustainable practices.

### What are your expectations from InnovaMare Academy?

#### 4 responses

- To learn a lot of new things and meet new people.
- To learn and get inspiration. Meet a variety of motivated and clever individuals who share the same passions and aspirations.
- To meet new people, have fun and learn about new technology.
- To learn, have fun and meet new people.

### Have you taken a similar class/workshop before?

#### 4 responses

- Not thus far
- I haven't.
- I did not.
- In particular, no. However, we do learn a lot about sustainability and marine technologies in college.

### What do you hope to learn from InnovaMare Academy?

#### 4 responses

- I'm mostly curious about topics such as marine robotics, autonomous and unmanned surface vehicles, underwater gliders etc.
- How to take all the wonderful tools available to us as engineers and apply them toward improving outdated, inefficient, and harmful practices in the maritime industries.
- To learn more about using robots and sensors in other environments than industrial or manufacturing.

- I hope to learn about examples of positive practices in sense of blue economy sustainability and possibilities of funding such projects (e.g., EU funding).

#### **What months you find are the best to organize next Academy?**

##### **4 responses**

- I think the beginning or mid-May is perfect.
- May or September.
- May
- April, May

## Questionnaire after the InnovaMare Academy

#### **How did the Academy meet your expectations?**

##### **7 responses**

- It was far more interesting and fun than I thought it would be.
- To be honest I didn't have much expectation.
- My expectations were fulfilled through concise lectures on the announced topics, and in addition, I had the opportunity to connect with students of different academic fields who are interested in the same field as me.
- I was a little bit surprised because I was expecting there would be a talk about technical things even though I read the program but probably didn't understand exactly what it was about. Overall, I'm still thankful to be there.
- It was ok.
- The Academy exactly met my expectations - I was expecting to acquire new knowledge, meet new people and learn about the blue industry and innovations from the people who are making their mark in that field.
- Very much, I did not hope to gain so much knowledge from my colleagues from the coastal side.

#### **What did you learn from at the Academy that you did not know before?**

##### **6 responses**

- Everything was new to me; I didn't learn that much about underwater technology before
- I didn't know anything about blue economy and marine robotics, I expect to work more with underwater robots etc.

- In my undergraduate studies, I attended courses that included each topic individually, and for some topics even several courses. But the only thing we didn't have was financing and lifecycle of innovation in blue economy, which was excellent and really interested me.
- I learned a lot about business and how to promote it, technology used to monitor the sea, some introduction to how a company works and the ways it needs to adapt and basics of the Machine learning.
- I've learned about the process of the photogrammetry and tools for performing it. Furthermore, I've learned the basics about the application of the AI in the Blue economy and details about machine learning algorithms.
- Enough of that, mostly facts about the sea and what is there and what effect it has on us, the world that we must preserve and protect.

**Did you face any challenges while attending the Academy? If so, what were they, and how did you overcome them?**

**7 responses**

- Only challenge for me was walking back up to campus but it was worth it.
- The biggest challenge was orientation in Šibenik because I was first time there and didn't really know roads and path to go from bus station to fortress, then from fortresses to Polytechnics of Šibenik.
- I didn't have any obstacles at the academy that prevented me from following the units, but I didn't like the fact that a certain lecture was online.
- Yes, in the beginning when everything was new to me, but after a few days I got comfortable.
- No
- No, I didn't face any challenges while attending the Academy. From my point of view everything was understandable, well explained and related to the topics.
- My biggest problem was the conversation in English, but everything else was understandable and comprehensible.

**Were the Academy materials helpful? If not, what could have been done to improve them?**

**7 responses**

- Yes
- Materials were helpful and I hope it would help me in future.
- They are helpful and I like the approach of the lecturers who gave us roles in certain parts to work as a team.
- Yes, I'm glad we're able to get the presentations from the lectures at e-mail address.
- They were helpful.



### What was your favorite part of the lectures?

#### 7 responses

- Learning about underwater technologies and their use
- For me the best part was working in group, but I will improve it by not having it first day rather second or third day.
- Lecture about financing and lifecycle of innovation in blue economy because the the speaker was excellent and gave great information that is not widespread and very valuable. I would like an academy just about that.
- I like the interaction with class in the way it isn't just questioning, but active interaction with terms.
- When we had real life examples.
- The part of the lectures I've liked the most was the teamwork in solving marine related issue because we were randomly formed into groups with people with knowledge in different areas, so everyone could contribute to resolving the issue from different perspective. The only minor flaw was the time we had for preparation - I think it would be more efficient if we had an extra half an hour.
- On the last Friday, there was a practical part, even though the rain hindered us a bit, but it still left me with the greatest experience on the first day, because it was work in a group where we all got to know each other right away!

### How could the Academy be improved?

#### 6 responses

- I think it will be better to explain at the first day what is blue economy because we all talked about it, but only at the fourth day it was explained. Also, it would be better if we could make some kind of marine robot while we are mostly mechatronics, robotics, and electrical engineering students. Also, it would be great to include more companies that work with marine robotics etc. So, we could talk about student job and /or future job.
- All lectures should be live in the classroom, and if there is a possibility to divide academy into several workshops that will deal with each individual topic from the ones presented separately.
- Maybe more details about the program, not just short explanation
- More field and practical work. More tasks and active participation rather than passive listening.
- If possible, it would be more interesting if we had field work and on-site demonstrations every day during the lectures. Another idea is to work in teams on a specific problem during the course with implementation of new knowledge learned at the lectures.
- With as much group work as possible, smart choice of lecture hall, more interaction with students, maybe a different approach to teaching.

**Would you recommend this class to others? If so, why? If not, why not?**

**7 responses**

- Yes, it was interesting and good to practice English.
- I would recommend, firstly because a lot of us that aren't from see side (Zagorje, Slavonija etc) we are not familiar with blue economy and marine robotics.
- I would recommend them to everyone because they are quality lecturers with a lot of experience and knowledge, which is evident.
- Yes, because I think it's interesting experience and it's something that isn't talked more about.
- Yes. It's always good to learn something new.
- Yes, I would recommend it because it is a unique experience and opportunity to learn about innovative practices and methods for sustainability in marine world and connect with people from different fields in the blue industry (but the same goal).
- Of course, I would, a wonderful experience, primarily new knowledge and a team with which I stayed in contact. A big yes!

**Do you think that there were benefits that could be helpful in your future employment, career development?**

**6 responses**

- I think that I am now more competitive than other students that weren't at the academy, because now I know more about marine robotics, and that field of work.
- If I had done the networking properly, I'm sure it would have :)
- Yes, but maybe not so for me as for someone who is expert in this type of field.
- Yes.
- Yes, participation in this type of projects is a helpful factor in achieving competitiveness at the employment market. I appreciate the opportunity.
- Of course, I will add knowledge about it, for example 3-D modeling of an area or some management with it. Any knowledge in another field is only a plus for the employer!

## Program of the InnovaMare Academy

### Program:

<b>Monday</b> 10,00 – 14,00	<b>Andrea Saiani</b> Entrepreneurship and digital transformation of ocean industry
14,00	LUNCH
<b>Tuesday</b> 10,00 – 12,00  12,00-14,00	<b>Antonio Vasiljević (online)</b> Use of maritime robotics and sensors in monitoring activities in seas and oceans  <b>Josip Rukavina (online)</b> Examination of submarine and coastal structures using machine learning
14,00	LUNCH
<b>Wednesday</b> 10,00 – 14,00	<b>Frane Urem</b> Introduction to Artificial Intelligence in the Blue Economy
14,00	LUNCH
<b>Thursday</b> 10,00 – 14,00	<b>Marija Stupalo</b> Financing and life cycle of innovation in blue economy sectors – from idea to the final product
14,00	LUNCH
<b>Friday</b> 10,00 – 16,00	Participation at the strategic project InnovaMare Final conference and ceremonial awarding of certificates to Academy participants

13.00-13.20	Ceremonial awarding of certificates to Academy participants
13.20-14.00	Networking break
14.00-16.00 Demonstration sites of Living Lab Adriatic Sea	<p><b>1. Demonstration of marine technologies in Martinska</b> IRB FER, UNIZD, CNR ISMAR, OGS, GEOMAR, VECTRINO, SALONA VAR</p> <p><b>2. Samples collection with IRB</b> - two groups with 7 participants together with IRB on research boat</p> <p><b>3. Visitor centre Minerska</b> – tour to the centre with representative of Šibenik-knin county and networking</p>

## Attendance list and photographs

Attendance list –InnovaMare Academy – Šibenik  
8.-12.5.2023.

INSTITUTION	NAME AND SURNAME	E-MAIL	CONTACT NUMBER	SIGNATURE
CREATNI CENTAR OF ECONOMY	MATEO IVANAC	ivanac@chge.hr	091 311 4489	<i>Mateo</i>
— —	Željka Rajković	zrajkovic@hpl.hr	091 244 0120	<i>Zeljka Rajković</i>
— —	JASNA PLETKOVIĆ	jpletkovic@hpl.hr		<i>Pletković</i>

By signing this Attendance list, you agree that you have been informed that your personal data will be gathered in accordance with Article 13 of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 28 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR - General Data Protection Regulation). That includes video and web-streaming, photography service, and other public activities which ensures project visibility.

European Regional Development Fund

INSTITUTION	NAME AND SURNAME	E-MAIL	CONTACT NUMBER	SIGNATURE
ZAGREB FER	DOMINIK ERJIĆ	dominik.eric5@gmail.com	+385 99 3664645	<i>Dominik Erjić</i>
ZAGREB FER	LOVRO BOŽIČEVIĆ	lovro.bozicevic@gmail.com	099 788 1134	<i>Lovro Božičević</i>
SVEUČILIŠTE SJEVER	JOŠIP KRŠINIĆ	jnosip3814@gmail.com	091 5929554	<i>Jošip Kršinić</i>
Sveučilište Sjever	Sebastijan Vračar	sebastijan.vracar00@gmail.com	098 306 0093	<i>Vračar</i>

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European Regional Development Fund

INSTITUTION	NAME AND SURNAME	E-MAIL	CONTACT NUMBER	SIGNATURE
SVEUČILIŠTE SJEVER	MASA RADOVANOVIĆ	rmaja2020@gmail.com	0913693885	<i>Masa</i>
SVEUČILIŠTE SJEVER	PATRIK DVORSKI	PATRIK.DVORSKI00@GMAIL.COM	0917301913	<i>Patrick</i>
SVEUČILIŠTE SJEVER	MARCO ŠVACO	MARŠVACO@UNIM.HR	051 556 5826	<i>Marco</i>
Sveučilište Sjever	Dunja Šrpak	dsrpak@unim.hr	098 821 891	<i>Dunja</i>

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European Regional Development Fund

INSTITUTION	NAME AND SURNAME	E-MAIL	CONTACT NUMBER	SIGNATURE
SVEUČILIŠTE SJEVER	ROBERT GRANOŠEK	rognmerek@unim.hr	099/572 1690	<i>Robert Granošek</i>
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European Regional Development Fund

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European Regional Development Fund

INSTITUTION	NAME AND SURNAME	E-MAIL	CONTACT NUMBER	SIGNATURE
Ruder Bošković Institut	MARIJA PARAC	mparac@irb.hr	099 789 6781	<i>Marija Parac</i>

By signing this Attendance list, you agree that you have been informed that your personal data will be gathered in accordance with Article 13 of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 28 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR - General Data Protection Regulation). That includes video and web-streaming, photography service, and other public activities which ensures project visibility.

European Regional Development Fund

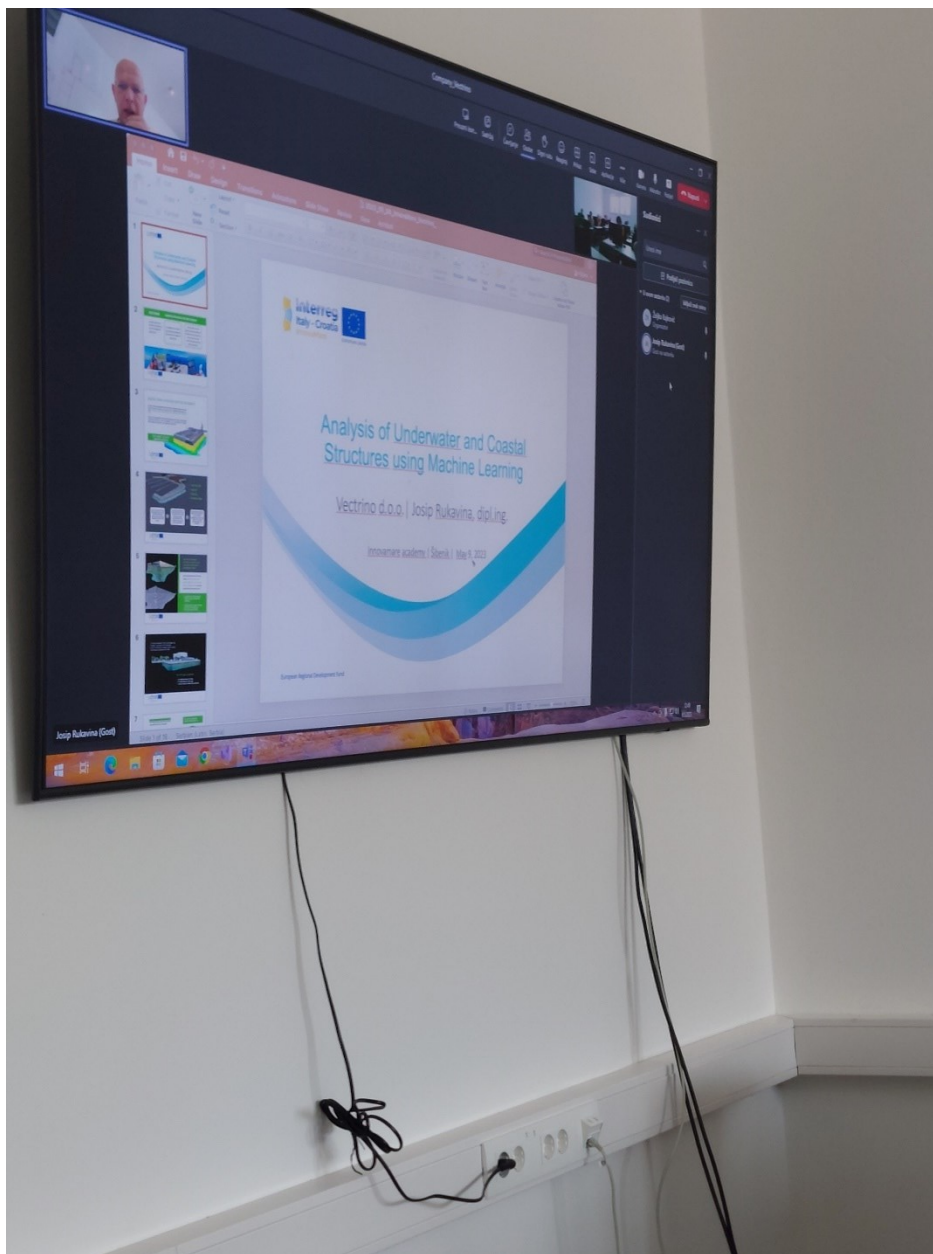


First day – Andrea Saiani

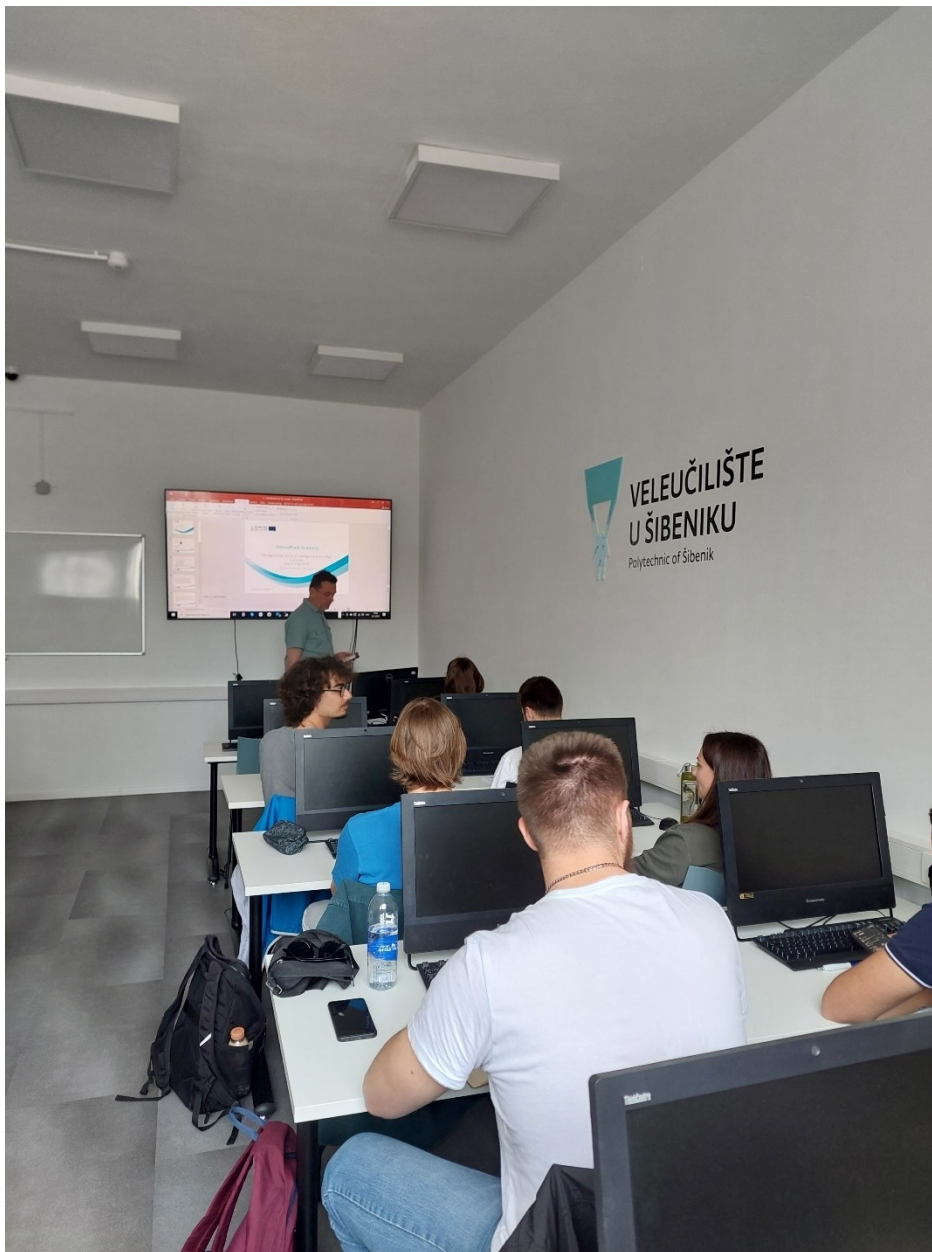




Second day – Antonio Vasilijević



Second day – Josip Rukavina



Third day – Frane Urem



Fourth day – Marija Stupalo



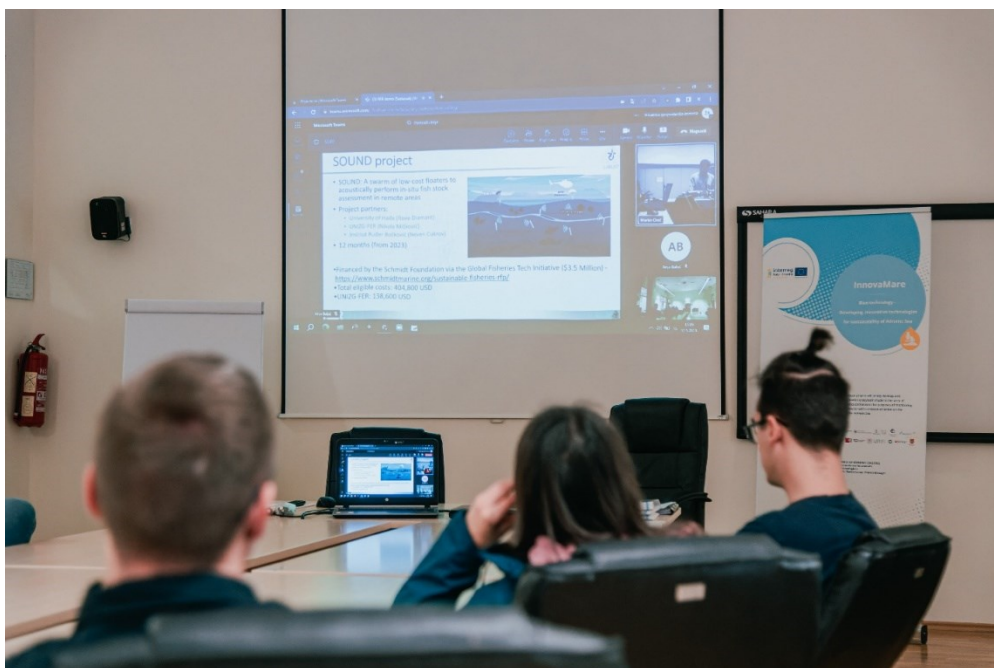
Fifth day – demonstration of the marine technologies to the students - Vectrino



Fifth day – demonstration of the marine technologies to the students – Geomar



Fifth day – demonstration of the marine technologies to the students – Salona Var



Fifth day – demonstration of the marine technologies to the students – University of Zagreb, Faculty of Electrical Engineering and Computing



Fifth day – Ceremonial awarding of the certificates to the participants of the Academy



## Conclusion

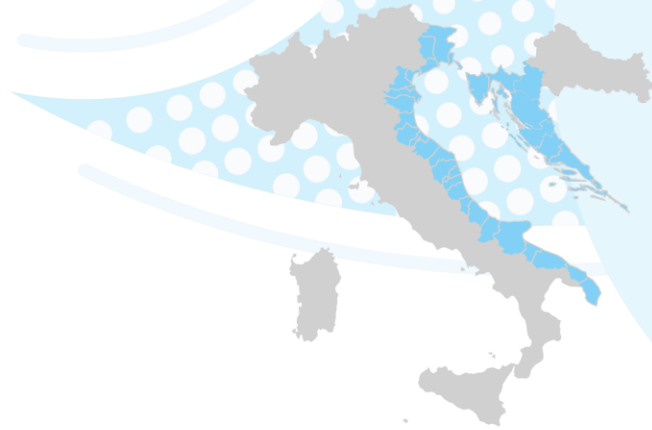
The InnovaMare Academy was organized as a result of project activities and it took place in Šibenik from May 8<sup>th</sup> until May 12<sup>th</sup>, 2023. The lectures were organized every day from 10AM – 2PM covering different topics - related to the digital and green transformation of the blue economy and the application of maritime technologies with a focus on robotics and sensors. The lecturers were university professors and entrepreneurs since the aim of the Academy was to prepare students with both theoretical and practical knowledge and experience.

Call for expressions of interest to participate in the InnovaMare Academy has been sent to the Universities and educational institutions to Italy and Croatia. Max range of 35 participants was planned and we had 14 students participating from the University North to the departments of Electrical engineering and mechanical engineering, Faculty of Electrical Engineering and Computing and University of Zadar and one PhD student from Ruđer Bošković Institute.

Students had lectures on topics of Applications of Marine Robotics, Use of maritime robotics and sensors in monitoring activities in seas and oceans and Subsea Residency, Digital Transformation in The Blue Industry, Introduction to Artificial Intelligence in the Blue Economy and learned more about Classification and its applications, Regression and its applications, Clustering and its applications and Introduction to deep learning, Financing and life cycle of innovation in blue economy sectors – from idea to the final product and Analysis of Underwater and Coastal Structures using Machine Learning lectured by the professors and the entrepreneurs.

The practical part of the Academy was held on the last day of the Academy by professors and entrepreneurs where students were presented and were able to try to handle with the Salona Vars' innovative product - ROTO SPREADER that is used for feeding fish in mariculture, Vectrinos' 15m long carbon pole 15m long carbon pole, a unique methodology for the coastal area of shallow water that greatly facilitates the job of managing assets under water because it always enables a realistic representation of the situation, Geomars' multibeam echosounder system Teledyne RESON SeaBat T20-P and mini ROV Deep Trekker DTG3 and Faculty of Electrical Engineering and Computing presented a drifter used for vertical profiling in the sea.

In order to prepare for the next InnovaMare Academy, we organized questionnaires before and after the Academy for the students. According to the questionnaire before the Academy, students applied for the Academy because of their interest in robotics and sensors and for acquiring new and valuable knowledge. After the Academy, we wanted to know more about how they were satisfied with the Academy. They answers stated that the program and materials were understandable, well explained and related to the topics, they suggested more field and practical work. They found Academy a helpful factor in achieving competitiveness at the employment market and would recommend it to the other students.



## PROJECT PARTNERS

### Lead Applicant



CROATIAN  
CHAMBER OF  
ECONOMY

### Partners



UNIONCAMERE  
VENETO



UNIVERSITÀ  
DEGLI STUDI DI TRIESTE



REGIONE PUGLIA

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Agenzia regionale  
per la tecnologia  
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Consiglio Nazionale  
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### Associated Partner

Communication  
Technology



FER  
Faculty of Electrical  
Engineering and  
Computing



UNIRI



GEOMAR



SIBENSKO-KNINSKA  
ŽUPANIJA

## CONTACTS

CROATIAN CHAMBER OF ECONOMY (CROATIA)

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CONTACT PERSON: Mateo Ivanac, Project Manager

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