ROMANIAN - NORWEGIAN STRATEGIC COOPERATION IN MARITIME HIGHER EDUCATION FOR ENHANCEMENT HUMAN CAPITAL AND KNOWLEDGE BASE IN FIELD OF MARINE INTELLIGENT TECHNOLOGIES

Acronym: MARINTECH

INFORMATION PROJECT

- *Project start date:* Sep 2021

- *Project end date:* Aug 2023

- *Applicant institution*: Academia Navală „ Mircea cel Bătrân" Constanţa

- *Partner*: Norges teknisk-naturvitenskapelige universitet / NTNU Ålesund

- *Total budget*: 162.393,00 EUR

- Funded under the EEA Grants - Financial Mechanism 2014-2021

THE EDUCATION, SCHOLARSHIPS, APPRENTICESHIPS AND YOUTH ENTREPRENEURSHIP PROGRAMME (ESAYEP), 2014-2021
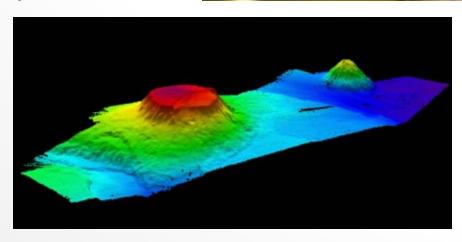
PROJECT IMPLEMENTATION FIELD

- Fields of marine engineering training human capital within the project:

✓ Robotics in the maritime industry;

✓Machine learning in the maritime industry;

✓ Oceanography and Hydrography

WHAT ARE THE TARGET GROUPS OF THE PROJECT?

✓ The target group for the development of human capital in the field of intelligent marine technologies

- the students of the master's studies of both partner universities;

- the academic staff of both partner universities.

✓ Fields of activity on the labor market benefiting from the training of human capital in the use of intelligent marine technologies:

- the port industry, the exploitation of marine resources, biomarine research, marine universities, the defense system, etc.

THE DIRECTIONS OF ACTION OF THE PROJECT

- The enhancement of the quality and relevance of education and training

- Higher education student and staff learning mobility between donor-DS and beneficiary countries – BC

- Cooperation and partnerships between education and the world of work

- Professional development of teachers

THE MAIN OBJECTIVES OF THE PROJECT

The general objectives of the project to achieve these directions of action are:

✓ supporting the development of human capital (students, academic staff) in both universities with a strong interdisciplinary component on marine intelligent technologies;

✓ modernization of partner universities;

✓ ensuring a closer relationship between the educational offer and the labor market.
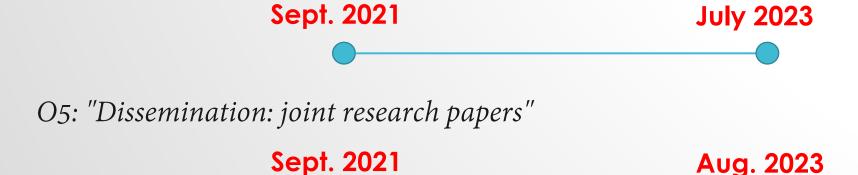
PROJECT ACTIVITIES

- A. PROJECT MANAGEMENT AND IMPLEMENTATION ACTIVITIES

- O. INTELLECTUAL OUTPUTS/ACTIVITIES

- M. MULTIPLIER EVENTS

- C. LEARNING/TEACHING/TRAINING ACTIVITIES

O. INTELLECTUAL OUTPUTS/ACTIVITIES

O1: "Innovative common curriculum for course modules on marine intelligent technologies: „Intelligent technologies applications in maritime industry"

Sept. 2021 ●————————————————● **Aug. 2022**

O2: "Virtual training platform on robotics and marine intelligent technologies"

Sept. 2021 ●————————————————● **July 2023**

O5: "Dissemination: joint research papers"

Sept. 2021 ●————————————————● **Aug. 2023**

O. INTELLECTUAL OUTPUTS

O1: *"Innovative common curriculum for course modules on marine intelligent technologies: „Intelligent technologies applications in maritime industry„*

The course modules:

NTNU - *"Practical applications in marine robotics" - 28 hours/semester (course-14 hours + laboratory-14 hours) - 4 ECTS;*

MBNA - *"Applications of intelligent technologies in bathymetry and oceanography"-28 hours/semester (course-14 hours + laboratory -14 hours) - 4 ECTS;*

NTNU - *"Machine learning applications in maritime industry" -28 hours/semester (course-14 hours + laboratory-14 hours) - 4 ECTS.*

Program of the course:

„Intelligent technologies applications in maritime industry"

- *in the first week of April 2023 - physical mobility - NTNU:*

    - "Practical applications in marine robotics" module: 6 hours lecture + 14 hours laboratory;

    - "Machine learning applications in the maritime industry" module: 6 hours lecture + 14 hours laboratory;

- *in the second week of April 2023 - virtual mobility (via VTP)*

    - "Practical applications in marine robotics" module: 8 hours lecture

    - "Machine learning applications in the maritime industry" module: 8 hours lecture.

- *in the first week of May 2023 - physical mobility – MBNA*

    - "Applications of intelligent technologies in bathymetry and oceanography„ module: 14 hours lecture + 14 hours laboratory;

- *in the third week of May 2023 - the evaluation of students - in the virtual environment, based on a grid questionnaire, jointly developed by both partners, via VTP- platform.*
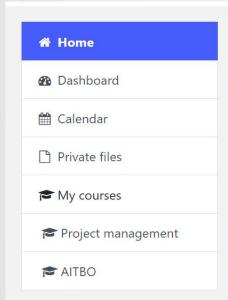
O. INTELLECTUAL OUTPUTS

O2: "Virtual training platform on robotics and marine intelligent technologies"

- *1 virtual advanced distributed learning platform* for sharing the course content to the students for specific course developed in O1 (course materials, video-tutorial, digital resources);

- *1 virtual collaborative e-campus for teachers and researchers*, where the academics to be connected peer-to-peer with their colleagues in the partner campuses, by forum dialogue, sharing the teaching practices results in the marine intelligent technologies area of knowledge;

- *1 virtual e-section dedicated to promoting the infrastructure facilities* where each partner will be able to provide information about the own didactic infrastructure and the conditions under which laboratories and infrastructure could be available for interested persons/researching groups, among the partners.

Virtual training platform → *https://marintech.anmb.ro/*

O. INTELLECTUAL OUTPUTS

O5: "Dissemination: joint research papers"

✓ *setting up a dedicated project webpage.*

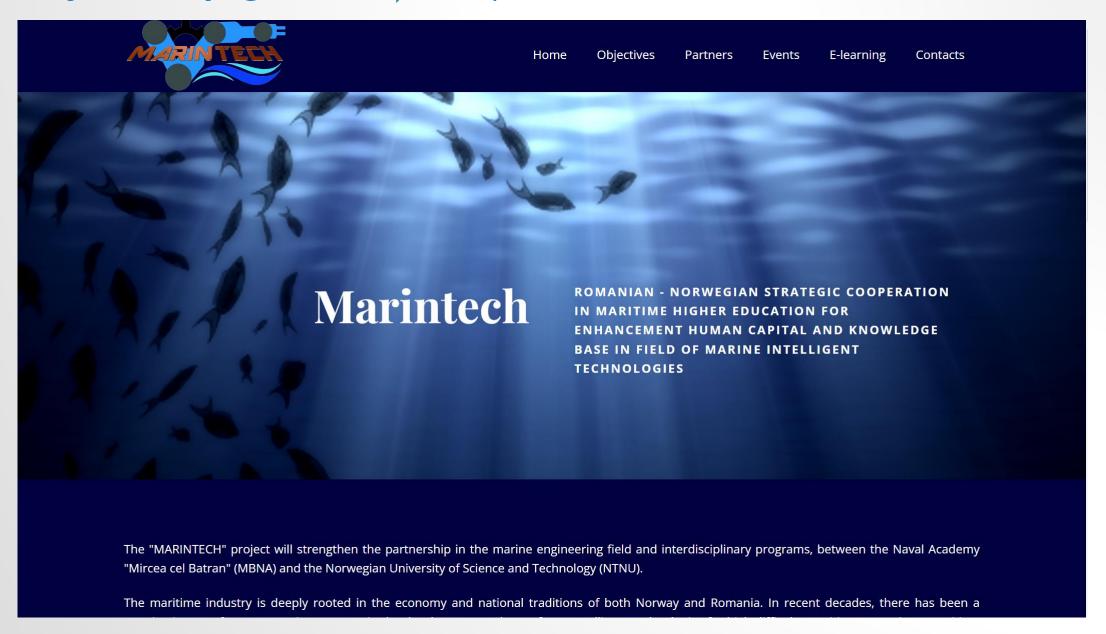✓ *a minimum of 2 joint articles to peer-reviewed journals.*

The topics of the articles:

- applications of intelligent technologies in the field of the maritime industry,

- digital and innovative teaching/learning/assessment methods applicable in the field of marine intelligent technologies, methods implemented and evaluated within the project.

✓ *the articles in newspapers, magazines, press releases and conferences.*

Project webpage ➡ *https://www.anmb.ro/marintech/*

C. LEARNING/TEACHING/TRAINING ACTIVITIES

The purpose of these activities:

- ✓ to improve the innovative learning/teaching practices and tools in the marine intelligent technologies area;

- ✓ to allow students and teachers to work together in multinational and multidisciplinary groups;

- ✓ to allow exchanges of experiences and good practices on teaching methods, content, and new curricular approaches between academic staff,

- ✓ to test innovative teaching methods that will be applied in the course modules of intelligent technologies applications in the maritime industry;

- ✓ to provide knowledge and skills to facilitate the enhancement of the graduates' insertion into the labor market.

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ **A1. *1st Transnational Project Management Meeting: Opening the project.***

    - Period: 22-23 September,2021

    - Participants: the project management teams from both universities and   guests

    - The venue: MBNA

Agenda

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ *C1. Short-term joint staff training events - Bathymetry and oceanography*

- *Period:* 16-20 May 2022
- *Participants:* 5 academic staff from each partner.
- *The venue:* MBNA
- *The topic:* innovative teaching methods and Intelligent technologies applied in the bathymetry and oceanography area.

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ **C2. *Short-term joint staff training events - Robotics and machine learning***

- *Period:* 19-23 September 2022

- *Participants: 5 academic staff from each partner.*

- *The venue: NTNU*

- *The topic: Innovative teaching methods and new technologies applied in robotics and machine learning in the maritime industry area.*

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ **C3. *Short term mobility of students - Marine intelligent technologies***

- *Period:* in the first week of April 2023

- *Duration:* 5 days

- *Participants:* 10 master students from each university.

- *The venue:* NTNU

- *The mobility aim:* physical participation of students in the following course modules:

  • „Practical applications in marine robotics: 20 hours (6 hours lecture + 14 hours laboratory);

  • „Machine learning applications in the maritime industry" : 20 hours (6 hours lecture + 14 hours laboratory);

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ *C4.* *Short term mobility of students - Bathymetry and oceanography*

- *Period:* in the first week of May 2023

- *Duration:* 5 days

- *Participants:* 10 master students from each university.

- *The venue:* MBNA

- *The mobility aim:* physical participation of students in the following course module:

  • "Applications of intelligent technologies in bathymetry and oceanography„ : 28 hours (14 hours lecture + 14 hours laboratory);

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ **C5.** *Intensive Programmes for higher education students - Robotics and machine learning in marine industry (Summer school)*

- *Period:* 05-10 Sept. 2022

- *Participants:* 10 master students from each university.

- *The venue: NTNU*

- *The purpose of the summer school is:*

■ *to develop and improve innovative learning/teaching practices and tools for students and teachers*

■ *to allow students and teachers to work together;*

■ *to provide knowledge and skills to facilitate the increase*

of the insertion on the labor market of graduates.

Agenda

C. LEARNING/TEACHING/TRAINING ACTIVITIES

✓ *C6. **Intensive Programmes for higher education students - Bathymetry and oceanography (Summer school)***

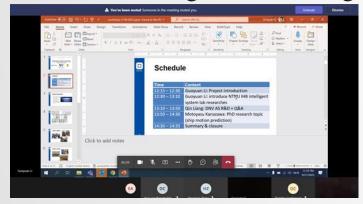- *Period: July 2023*

- *Duration: 5 days*

- *Participants: 10 master students and 5 staff from each university*

- *The venue: MBNA*

- *The purpose of the summer school is:*

  ▪ *to develop and improve innovative learning/teaching practices and tools for students and teachers in the marine intelligent technologies area, etc.*

  ▪ *to allow students and teachers to work together in multinational and multidisciplinary groups;*

  ▪ *to provide knowledge and skills to facilitate the increase of the insertion on the labor market of graduates.*

Agenda

M. MULTIPLIER EVENTS

✓ *M1. Workshop on: "Cooperation and partnerships between education and labor market on marine intelligent technologies in the North Sea area"* - September 27, 2022 – NTNU

✓ *M2: Workshop on: "Cooperation and partnerships between education and labor market on marine intelligent technologies in the Black Sea area"* - September 30, 2022 – MBNA

✓ *M3. Workshop on: "MARINTECH contribution on enhancing the human capital and knowledge versus the current labour market demands in the North Sea area"* - July 25, 2023 – NTNU

✓ *M4. Workshop on: "MARINTECH contribution on enhancing the human capital and knowledge versus the current labour market demands in the Black Sea area"* - July 27, 2023 – MBNA