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## MODERNIZING AND HARMONIZING MARITIME EDUCATION IN MONTENEGRO AND ALBANIA. MARED PROJECT

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**Abstract.** This paper presents achieved results of the first stage of the TEMPUS project (544257-TEMPUS-1-2013-1-ME-TEMPUS-JPCR) titled Modernizing and Harmonizing Maritime Education in Montenegro and Albania, MArED Project. The main objective of MArED project is to overcome a problem of competent and qualified human resources in maritime sector in Montenegro and Albania. It will be achieved through the modernization and harmonization of educational and training system in accordance to IMO and STCW Convention requirements.

The paper is divided into following sections: First section is an explanation of the background of the MArED project. Secondly, a general overview of the whole project and activities is described. After, a revision of the existing maritime undergraduate study programmes is carried out and taking into account the results obtained from this initial analysis; the development and design of a programme which meets the new requirements of the STCW for the University of Montenegro and Albania (PC)<sup>1</sup> is explained in third section. Fourth section is focused in the identification of the STCW 95/2010 competencies within the nautical and engine degrees (considering Barcelona School of Nautical Studies (FNB) curricula) and which of them can be evaluated by approved simulator training and also (re) training of PC teaching staff is described. Finally, achieved results and conclusions are presented.

**Key words:** Maritime Education and Training (MET), STCW Code, simulation

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<sup>1</sup> Partners Countries, id est not part of the EU but with future possibilities to be included.

## 1 BACKGROUND OF MARED PROJECT

The project arose in response to the obligations of Partner Countries (PC) concerning the ratification and implementation of the latest amendments to the International Maritime Organization (IMO) [1] regulations related to education and training of seafarers. All necessary changes and harmonization aim to meet the prescribed international standards to be carried out by 2017, in order to enable the educational and training systems of Partner Countries keep the status of internationally recognized maritime educational and training institutions. The latest IMO requirements refer to the reform of the existing and development of new study programmes, which anticipates the creation of opportunities for both theoretical and practical training of students, through the modernization of laboratories, marine simulators and practical workshops. Furthermore, by introducing certain IMO model courses for seafarers, the educational institution aims to develop a lifelong learning process for providing the seafarers with the possibility of continuous professional training.

The harmonization of the educational programmes with valid international standards, as stipulated by IMOs STCW Convention and its Manila amendments 2010, ensures the survival of maritime educational institutions and their competitiveness in the international market, thus ensuring the competitiveness of the seafarers from Partner Countries, as well.

Both Montenegro and Albania are strategic Adriatic countries with long maritime tradition, sharing the similar problems of derogation of maritime sector caused by transition. Namely, the Montenegrin shipping fleet before 1990's war period consisted of two shipping companies with 50 ocean going merchant ships, employing more than 2,500 Montenegrin seafarers, while rest of 2,500 were employed at international shipping companies. At that time, it was the second largest economic sector in the country. Today, there are only two ocean going merchant ships, and about 100 small vessels of up to 3,000 DWT, employing about 300 Montenegrin seafarers. The rest of 4,000 are employed internationally. Before 1990's, Albanian shipping fleet was organized as a state-owned enterprise with a capacity of about 90,000 DWT. Currently, this fleet is represented by many private owners who have vessels with a capacity of 1,000 – 2,000 DWT. Still, this sector is weak, at both the technical and management level. Currently there are about 2,000 Albanian seafarers.

Such situation significantly affected the maritime education and training process in both countries. The following disadvantages are notable: the curriculum is not harmonized with IMO STCW Convention, which is the precondition for internationally recognized maritime education and training, the teaching process is

mainly theoretical due to poor laboratory and marine simulator conditions (or without any), difficulties in involving active and experienced seafarers (masters and chief engineers) for practical training, difficulties in organizing onboard trainings, staff trainings, decreased number of interested students and similar. All this resulted in the deterioration of maritime competencies and therefore difficulties in employment of graduates and seafarers on international maritime market.

The Governments and policy makers in both countries are making efforts to improve the situation and to bring maritime education sector in the focus of development. Montenegrin Government adopted several strategies covering this area: National strategy for transportation sector (2014) [2], National strategy for sustainable development (revised in 2012) [3], while Albanian adopted: Transport Sector Strategy (2008-2013) [4] and Fisheries and aquaculture development strategy (2007-2015). Those national strategies are in accordance with the European Maritime Strategy (2008-2018). [5]

Such intention can be achieved only through developing the synergy of maritime industry and maritime education. With the introduction of IMO model courses [6], as a way of lifelong learning, the seafarers will be provided with the continuous professional training in order to remain competitive at the international labour market. That way, partner countries will be able to keep their status of the countries meeting the strictest IMO requirements.

The project idea itself helps the PCs obtaining a certain status at the international maritime market, and therewith also a step forward towards European and Euro-Atlantic integrations.

The harmonized educational systems in PC and EU countries results in the creation of competitive maritime staff at an international level, which enables the national maritime companies to employ national, but, at the same time, competent and highly educated staff. This way, we would contribute to the economic status of the PCs, and therewith also meet the prerequisites for easier and faster reaching of European standards.

## 2 GENERAL OVERVIEW OF THE PROJECT

The main objective of MArED project is to overcome a problem of competent and qualified human resources in maritime sector in Montenegro and Albania. It will be achieved through the modernization and harmonization of educational and training system in accordance to IMO and STCW Convention requirements.

The project is divided into different stages, which are assigned to the different participating universities and institutions. Next table (Table 1) shows the list of the project partners.

**Table 1** MAReD project partners

Role	Organization name	Country
Coordinator	University of Montenegro (UoM)	Montenegro
Partner	University "Ismaïl Qemali" of Vlora (UV)	Albania
Partner	Shkodra University "Luigj Gurakuqi" (UNISHK)	Albania
Partner	University of Ljubljana	Slovenia
Partner	Universitat Politècnica de Catalunya	Spain
Partner	Constanta Maritime University	Romania
Partner	University of Split	Croatia
Partner	Karl-Franzens-Universität Graz	Austria
Partner	Ministry of Education of Montenegro	Montenegro
Partner	Crnogorska Plovidba A.D. Kotor	Montenegro
Partner	Institute of transportation	Montenegro
Partner	Invar-Ivosevic Ltd.	Montenegro
Partner	Montenegrin Association for New Technologies	Montenegro

The specific objectives of the project are: Revision of undergraduate study programme, 180 ECTS, in Navigation and Marine Engineering at UoM; Development of undergraduate study programme in Marine Electro Technics, 180 ECTS, at UoM; Revision of undergraduate study programmes, 180 ECTS, in Navigation and Naval Engineering at UV; Development of 2 new postgraduate (MSc) courses, 8 ECTS, in field of Marine Financing and Marketing at UNISHK; Development of IMO model courses for LLL based training of seafarers at UoM and UV; (Re)accreditation and implementation of developed undergraduate study programmes and IMO model courses; Update existing and build new teaching and infrastructural resources for maritime education and training in Montenegro and Albania; Training of teaching staff and its mobility within the PCs and EU universities and fostering cooperation between university and maritime sector enterprises.

The project duration is from 01/12/2013 to 30/11/2016 (36 month in total) and is divided into 9 Work Packages.

At this moment, the project has concluded the first work package (WP1, Revision of existing and development of new undergraduate study programmes) and part of second work package (WP2, Upgrading teaching materials and methodology, and (re)training of teaching staff).

### 3 REVISION OF EXISTING AND DEVELOPMENT OF NEW UNDERGRADUATE STUDY PROGRAMMES (WP1)

The Work package 1 was successfully finished in September 2014 with the presentation of the Curricula and Syllabi Catalogues. The academic partners from

Montenegro and Albania were main stakeholders within this Work package and outcomes were directly connected to them aiming to improve educational process in accordance with the latest international maritime requirements (STCW Convention with Manila Amendments).

#### 3.1 Revision of existing study programmes

The first activity was to analyse current state and to identify possibilities and adequate harmonization strategy (model) for each mentioned PC institution.

The lead partners at this Work package (University of Split), together with other EU maritime partners created Subreports which were used as a basis for next implementation step - creation of the Guideline for the curricula revision and development. The Guideline was essential for the harmonization of existing and development of new undergraduate study programmes because it consists of information such as new courses have to be developed, number of hours should be changed per each course and specification of theoretical and practical topics should be implemented.

#### 3.2 Development of new study programmes

The final step was to create syllabi per each course according to the accepted study programme curricula. In this implementation phase, the EU partners were engaged as auditors, just to monitor the implementation process and the main work was performed by the PC partners. The project industrial partners were also involved in this phase, mainly regarding the preparation of the course concept and practical exercises.

### 3.3 Restructuring of the Bachelor Programs in Navigation Studies (University of Vlora). Case Example

This section is an example of the work carried out during this stage. During the restructuring of the Bachelor program in navigation studies at the University of Vlora, work was focused in four main areas, aiming to achieve a harmonious structure of the programs, in accordance with the STCW standards.

Table 2 shows the current situation of distribution of programs as defined in the second meeting held in Split meeting.

### 4 UPGRADING TEACHING MATERIALS AND METHODOLOGY AND (RE)TRAINING OF TEACHING STAFF (WP2)

The aim of this WP2 is to bring teaching staff PCs to EU partner country institutions in order to help adopting good practice in teaching and presenting the key disciplines of maritime studies. After their return the trained staff will organize trainings in PCs. Reports on study visits, number of teachers (re)trained and the proposal for teaching materials development are the indicators of training performances. This WP started in September 2014 and has not been finished yet. At the

**Table 2** Current situation of distribution of programs of the Bachelor Programs in Navigation Studies (University of Vlora)

English	Navigation	Cargo handling	Other STCW	General	Elective	On board
75	615	75	450	450	0	75
Total: 1740						
To cover IMO Model 7.01 (without English): 1215						

**Table 3** The expected situation after restructuring of the Bachelor Programs in Navigation Studies (University of Vlora)

English	Navigation	Cargo handling	Other STCW	General	Elective	On board
225	615	150	450	525	75	150
Total: 2190						
To cover IMO Model 7.01 (without English): 1365						

Finally, the distribution of subjects after restructuring programs is drawn in Table 4:

**Table 4** Structure of the restructured Bachelor Program in Navigation Studies (University of Vlora)

<b>Compulsory Courses</b>					
<b>General Formation Courses (40 credits)</b>	1	MAT 154	Calculus I	8	
		MAT 155	Calculus II	8	
	2	KIM 143	General Chemistry	8	
		3	FIZ 151	Introduction to Physic I	8
FIZ 152	Introduction to Physic II		8		
<b>Characterizing Courses of the program (87 credits)</b>	4	DET 211	Maritime Safety	8	
		5	DET 212	Meteorology and Oceanography	7
	6	DET 213	Coastal Navigation	8	
		7	DET 221	Ship Handling & Manoeuvring	8
	8	DET 222	Operation of Emergency Onboard & Care for Persons	8	
		9	DET 311	Electronic Navigation	8
	10		DET 312	Celestial Navigation	8
		11	DET 313	Theory and Techniques of Maritime Transport	8
	12		DET 314	Maritime Radio communication	8
		13	DET 321	Ship Management	8
	14		DET 322	Maritime Law	8
		<b>Formative and integrative Courses (21 credits)</b>	15	NAV 223	Ship Theory
	16		DET 223	Basic Electronics&Navigational Technical Equipments	7
			17	DET 215	Ship Knowledges
<b>Foreign Language and Informatics Courses (19 credits)</b>	18	ENG 132	English	6	
		19	DET 121	Navigational Chartography	8
	20	DET 325	Navigational Practical Training	5	
<b>Elective Courses</b>					
<b>Selective Courses (6 credits)</b>	21	DET 131	Maritime Ecology		
		DET 132	Maritime History	6	
		CST 130	Introduction to Computer		
<b>Diploma Thesis (7 Credits)</b>	22	DET 398	Thesis	7	

**Table 5** Example of the STCW competences associated to Degree in Nautical Studies and Maritime Transport curricula and which one can be evaluated by FNB simulators

Subject	STCW Competence	Evaluated by simulator	Evaluated by simulator at FNB
Maritime Technical English	8	No	
Coastal Navigation	1B 1C* (1F2) 2E 4B2 5B	Yes	Yes
Maritime Medicine	17 20C	No	
Technical English for Maritime Navigation	8	No	
Naval Construction	12 14B	Yes	No
Ship Theory	14A	Yes	No
Electronic aids to Navigation	1D 1E 1G 2D 4A 4B1 4C 4D 5A	Yes	Yes
Stowage	11	Yes	Only oil takers

end of September 2014, UPC identified the main STCW 95/2010 competencies in their syllabus within the nautical and engine degrees (considering FNB curricula) and which of them could be evaluated by approved simulator training simulator (see Table 5).

Each identified competency – subject, was sent to PC countries for getting the correlation between UPC and PC subjects. This was done to tune and refine the training to be carried out by UPC.

#### 4.1. (Re) training of teaching staff

UPC organised in 17<sup>th</sup> September 2014 the Working meeting 4 of the research project at the Universitat Politècnica de Catalunya – Barcelona School of Nautical Studies (FNB) and during the working meeting held in Barcelona, we decided the training and the selection of teaching staff members to be future assistants from PCs. Detailed Agenda was negotiated between EU host and PCs and it was agreed to carry out the retraining of teaching staff during 24<sup>th</sup>-28<sup>th</sup> of November, 2014. Detailed Agenda was negotiated between EU host and PCs and it was agreed to carry out the retraining of teaching staff during 24<sup>th</sup>-28<sup>th</sup> of November. Second retraining of teaching staff was held during 26<sup>th</sup>-28<sup>th</sup> May 2015 in Barcelona School of Nautical Studies (UPC) and this time the retraining was focused on Maritime transport and management.

## 5 CONCLUSIONS

The overall objectives of this initial part of the project are achieved. In order to evaluate and restructure of programs, partners were based, mainly, on the con-

clusions of MAReD meetings, standards and requirements provided by the IMO STCW, the comparison with similar programs of the other Universities partners, comments and suggestions made by the third part in Montenegro and Albania, the legal framework related with University Education and finally the requirements of the Bologna Declaration.

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