European Maritime and Fisheries Fund

Project: 863713-MarLEM

Maritime Logistics' Engineering and Management

TRAINING DESIGN
(Report on Training Specification / / Proposed Master Programme)

Deliver D3.2.
Report on Training Specification / Proposed Master Course

Version 1.0

7 July 2020

Contents

Terms and Definitions

21st Century skills

A blend of content knowledge, specific skills, expertise and literacies, which students need to master to succeed in work and life.

Blue Growth

European long-term strategy to support sustainable growth in the marine and maritime sectors as a whole. Seas and oceans are drivers for the European economy and have great potential for innovation and growth.

Capacity building

Long-term, continuing process, in which all stakeholders participate (ministries, local authorities, non-governmental organizations and water user groups, professional associations, academics and others). In 1991 it was defined as a) the creation of an enabling environment with appropriate policy and legal frameworks; (b) institutional development, including community participation (of women in particular); and (c) human resources development and strengthening of managerial systems.

Competency

An observable behaviour supported by specific knowledge, skills, and attitudes. Each competency has a specific result or output.

European Skills Competences and Occupations classification (ESCO)

European multilingual classification of Skills, Competences, Qualifications and Occupations. ESCO works as a dictionary, describing, identifying and classifying professional occupations, skills, and qualifications relevant for the EU labour market and education and training.

Formal education

Education that is institutionalised, intentional and planned through public organisations and recognised private bodies, and in their totality constitute the formal education system of a country. Formal education programmes are thus recognised as such by the relevant national education or equivalent authorities.

Governance

It is the establishment of policies and continuous monitoring of their proper implementation, by the members of the governing body of an organization.

Interested party / stakeholder

person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity.

Learning Objectives

Describes a specific behaviour, conditions, level of achievement and is written from the learner's point of view.

Organization

Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.

Requirement

Need or expectation that is stated, generally implied or obligatory.

Skill

The ability to do an activity or job well, especially because you have done it many times.

Skills shortage

Refers to a useful understanding of what skills are in demand or may be in demand in the future for a particular job.

Target Population

The individual or group involved in a needs assessment or training program.

Acronyms and Abbreviations

A3ES – Agência de Acreditação e Avaliação do Ensino Superior

DGAM – Direção Geral da Autoridade Marítima

DGRM – Direção Geral dos Recursos Marítimos

EC – European Comission

EASME – European Agency for Small and Medium Enterprises

EMFF – European Maritime Fisheries Fund

ENQA – European Network on Quality Assurance

ISO – International Standards Organization

MLEM – Maritime Logistics Engineering and Management

SOLE – Society of Logistics Engineering

TNA – Training Needs Analysis

History of Changes

Table 1 - history of changes

Version	Publication date	Changes
1.0	01.06.2020	Initial version
2.0	10.07.2020	Version thoroughly reviewed to be shared and publicised

Contractual Aspects

Project: Maritime Logistics Engineering and Management (MarLEM)

https://grupoqualiseg.com/marlem

Deliverable – D3.2 – Report on Training Specification/Proposed Master Course

Work package: Wp3 – Training Design
Task: 3.1 to 3.3 – Constraints, Methods and Criteria and Training Specification

Confidentiality: public

Version: 2.0

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Actual Date of Delivery to the EC: 11.07.2020

Leader entity – EN/Defesa.

Participant(s): EN/Defesa, FCT/UNL, University of Strathclyde, Centre for Research & Technology Hellas, Foundation WEGEMT - A European Association Of Universities In Marine Technology and Related Sciences (WEGEMT)

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Legal Disclaimer

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1 Executive Summary

This report scope is the MarLEM project deliverable 3.2 – a proposed structure for a Master of Science in Maritime Logistics Engineering and Management, blending hard skills modules with soft skills ones. This report was the result of the join work of the academia component of the MarLEM project and describes the programme outline of a Master's Degree in Maritime Logistics Engineering and Management, which was discussed and agreed by the representatives of the universities within the project.

2 Introduction

Objective

For success, attitude is equally as important as ability.

- Sir Walter Scott

As the XVIII century Scottish poet and novelist Sir Walter Scott suggested, for success hard skills are a necessary condition but not sufficient. In addition to up to date maritime and Logistics engineering hard skills, the development of adequate soft skills required for the industry is also needed in order to achieve success across maritime logistics projects and operations. The MarLEM programme is designed to achieve its comprehensive goal, by fostering the development of both hard and soft skills into the programme participants.

The objective to be achieved with the current master programme is to develop a new professional profile which blends strong Maritime and Port Logistics hard skills together with the necessary soft skills aligned with the 21st Century skills framework.

2.1 Scope

The programme focuses on logistics engineering and management, and maritime and port logistics operations. A first approach to the programme's structure is presented herein, and will be discussed with the relevant stakeholders in the Atlantic Knowledge Triangle - a joint venture of industry representatives, authorities and academy.

2.2 Description

The design of the proposed master's programme must fully meet the principles and objectives of the EU MarLEM project, within the framework of the Bologna Process, making the connection between academia, industry and relevant authorities operating in the sea and coastal areas. The master's programme will only be successful if it manages to effectively respond to real world needs, developing competences and reinforcing skills needed by industry professionals that will contribute into mitigating the limitations currently faced by companies and other entities that belong to the sea cluster, making them more efficient, competitive and sustainable. Moreover, it takes into account the relevant legal frameworks and regulations, and integrates the authority's convictions for what are the current needs and how the sector will be likely regulated in the future.

In order to comply with the objectives that guided its creation, the masters programme intends to implement a disruptive vision, adopting innovative methodologies and techniques, in particular focusing in reducing the logistics environmental footprint.

3. Master Programme Design

The proposed programme encompasses two stages – a curricular one, and either a master level dissertation or an applied project or a professional internship followed by an adequate report. The first part will comprise nine courses or modules, which will provide both hard – seven modules, and soft skills – two modules, as presented in the list below.

The academic body responsible for the programme will seek to get its accreditation by European professional and academic bodies throughout Europe.

In order to turn the programme more attractive the contents of the courses may be dynamic in order to build on the principles of lifelong experience and the particular interests and objectives of students regarding each particular edition.

3.1 Courses

1. Introduction to Maritime Logistics
2. Integrated Logistics support in Maritime context
3. Maritime Trade Law
4. Maritime and Port Administration
5. Operations Management
6. Maritime Business Analysis
7. Maritime Logistics Technology
8. Leadership and Managerial Skills
9. Intercultural Negotiation

3.2 Master dissertation or Applied Project or Professional Internship

Options are given to participants either to elaborate a master level dissertation or a real-world maritime and port logistics project or to engage into a professional internship delivering a report. All options shall follow the rules laid down for each of the modalities, in terms of written reports and a public presentation. For the students who miss this phase of the programme, or do not wish finish the complete master programme, it will offer a Postgraduate Taught Certificate as an exit award for the success in the nine modules included in the programme.

4. Courses description

Below is a brief description of the aims and contents of each of the nine proposed courses on the curricular part:

4.1 Introduction to Maritime Logistics (56 contact hours)

This is a comprehensive introduction to the main subjects to be covered within the master programme, so that participants develop a broad picture and consciousness of what is expected during the programme. This course should provide attendants with the knowledge, skills and competences required to:

- Understand maritime logistics and identify the business, operational, technological and regulatory components
- Develop an integrated view of the maritime logistics chain, its sustainability and relationships with its environment, taking also a sea literacy perspective
- Identify and structure maritime logistics problems and be proactive in the search of appropriate solutions.

4.2 Integrated Logistics support in Maritime context (28 contact hours)

- This course should give an integrated view of the maritime systems logistics, focusing mainly on ships, their lifecycle and activities. An overview of the ships' logistic life cycle will be provided starting from the systems concept, acquisition phase and shipyard building. The sustainability or operational phase, the longest and more demanding period, integrates different support needs, including maintenance. The last phase is dedicated to reverse logistics, with end life disposal or reuse. An overview of Integrated Maritime Logistics support regarding future challenges will also be given.
- Due to the great diversity of tasks performed by ships and other structures that operate at sea, teaching should not be limited to the commercial activity of transporting products, but may be extended to other supporting activities such as maritime tourism, fishing, cruises, military or oil exploration platforms. As a cross-cutting issue, sustainability, in its three fundamental pillars, must be considered.

4.3 Maritime Trade Law (28 contact hours)

This curriculum unit should include the following learning contents:

- The concepts and sources of Maritime Law
- The international trade and shipping documents

- Cargo claims and bills of lading
- Established international commercial terms (INCOTERMS)
- Brokering and chartering practice

4.4 Maritime and Port Administration (28 contact hours)

Related to Maritime and Port Administration, students are expected to develop an adequate level of knowledge on the following subjects:

- Characterize the Maritime Administration and its functions as a global entity; Identify the components of the shipping industry in the context of logistics applications
- Recognize the functionalities of a sea port, related authorities and services
- Understand the role of ports as logistics centres
- Distinguish the different types of port terminals and conditions

4.5 Operations Management (28 contact hours)

The structure and contents are designed to satisfy the unit's objectives, providing students with a broad view of the main areas of operations management, specifically:

- Operations design
- Project management
- Decision making tools: linear programming, decision trees, waiting lines models, network models, simulation
- Lean 6-Sigma
- Sustainability
- Standards: quality; operational & technical risk; functional safety (IEC 615XX); HSE (Health, Safety & Environment) management; physical assets management

4.6 Maritime Business Analysis (28 contact hours)

The content of this course introduces and develops the fundamentals of the different business models that are common across the maritime logistics chain and the tools for financial analysis and evaluation of the maritime and supporting land operations, together with economic project appraisal and associated risks. It shall cover:

- Ship and fleet business: cycles, tariffs (liner and tramp) and investment/divestment. Journey business analysis (revenues, costs, economic speed, slow steaming)
- Port and terminal business: investment, costs and tariffs, coping with sea demand, ship requirements and land modes

- Inland supply chains business; land modes, multimodal and intermodal
- Investment analysis & project evaluation: time-value of money, investment analysis criteria, replacement projects evaluation
- Business risk: decision criteria under risk, decision trees

4.7 Maritime Logistics Technology (28 contact hours)

The following list of subjects aim to facilitate the acquisition of the skills defined for this area. The examples presented in the theoretical classes contribute to an illustration of the application of the fundamental concepts on information and communication technologies relevant to maritime logistics.

- Port and terminal technologies and impact on operations
- Communication technologies
- Detection/identification technologies: RFID and tracking systems; X-Ray scanning
- Automation and autonomous vehicles (ships, land and air)
- Platforms and marketplaces concerning Maritime logistic services
- ICT Literacy. Digital transformation: blockchain, AI, big data. Cyber Security

4.8 Leadership and Managerial Skills (28 contact hours)

The content of this course is intended to introduce leadership, creativity, and organizational behaviour models relevant to the leader in the maritime logistics sector.

- The General Manager & Business Policy
- Organizational Behaviour & Leadership in organizations
- Team Leadership. Collaboration and Communication
- Creativity and Innovation. Organizing for innovation.
- Global awareness and civic literacy.

4.9 Intercultural Negotiation (28 contact hours)

The content of this course is intended to introduce the development of intercultural negotiating skills, given that the maritime logistics is an international and multicultural business. It will allow participants to understand the differences between simple and complex negotiations. How to plan a negotiation and main tactics. Mind bias and mental traps in decision-making processes – a critical issue in negotiation context.

- Develop a systematic view of negotiation and conflict resolution approaches
- Understanding the difference between simple and complex negotiations

- Understand Negotiations between two parties and involving multiple parties

- Understand the role of power and influence in negotiation, as well as usable tactics

- Understand how different cultures negotiate.

5 Preliminary chronogram

In annex A, two options are being proposed with regard to the time schedule of the Master Programme. As depicted, there is a first block where all the above-mentioned courses will be delivered; and a second one within which a master dissertation, project or internship will be developed.

6 Conclusions and Recommendations

6.1 Conclusions

The proposed programme specifications may be refined by the MarLEM peers after the first edition. It intends to provide a first systematized proposal for the programme, where the contents and structure try to answer the requirements identified on the End-User needs report and the Concept and Structure Vision presented.

The suggested programme structure, departs from a holistic perspective on the port and maritime operations, supported on solid organizational management and logistics engineering and operations. It intends to approach the macro logistics services based and departing from sea through ports to inland in an optimized capillary multimodal network that maximizes added value and minimizes the environment footprint.

Teaching methodologies are not fully specified yet, however, in addition to traditional expository techniques, there shall be included new methodologies as mentioned on the previous *Report on Methods, Constraints and Criteria* (e.g. case studies, gamification).

6.2 Recommendations

In order to ensure a programme of high quality, complying with the master requirements and principles suggested by the MarLEM project, it is recommended that:

- Each course contents shall have the MarLEM programme principles and objectives into consideration.
- There shall be coherence and coordination among the several modules, including the optimal sequencing.
- The techniques and methodologies to employ on each course shall align with the course contents, while at the same time contributing to develop relevant soft skills, thus

preparing students to perform optimally as part of integrated teams within complex evolving systems.

- In order to ensure such challenging goals, the selected teachers shall have the adequate knowledge and experience. Faculty preparedness is of upmost importance and a suitable time period shall be provided in order to ensure the programme quality.
- The programme delivery format is an important point and an effort shall be done in order to optimise the contact time as well as remote sessions, if those are deemed necessary or beneficial. (A first proposal is provided on Annex A).

7 References

- EU. (2008). *The European Qualifications Framework for Lifelong Learning*. European Union.
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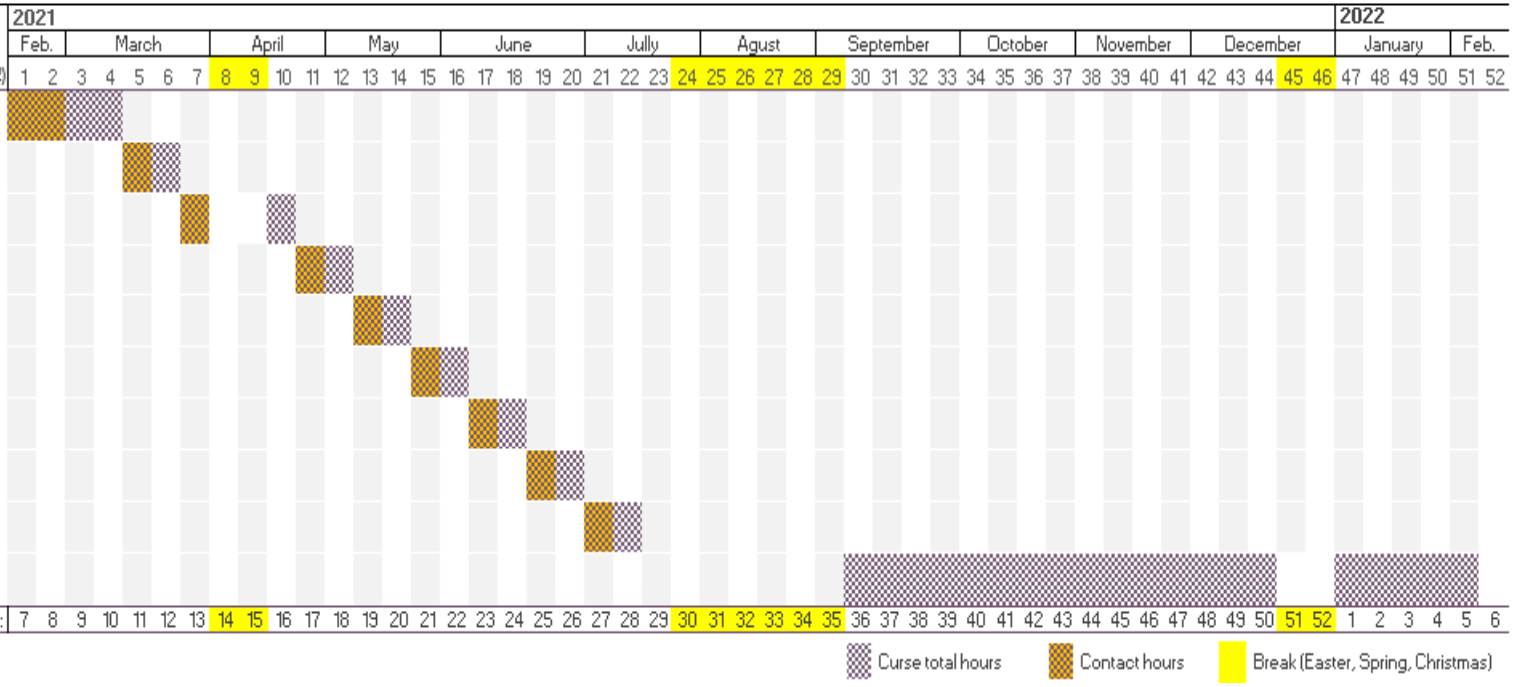
- OECD. (2018). The Future of education and skills: Education 2030. OECD.
- OECD. (2019). *OECD Future of education and skills 2030: OECD Learning Compass 2030, A series of concept notes*. OECD.
- Portuguese Naval Academy. (2015). *MAESCOLNAV 1002 - Manual da Qualidade* (Quality Handbook). Portuguese Navy.

Annex - A

First proposal

MSc in Maritime Logistics

Course (1)	Total working hours	Contact hours (2)
1. Introduction to Maritime Logistics	168	56
2. Integrated Logistics support in Maritime context	84	28
3. Maritime Trade Law	84	28
4. Maritime and Port Administration	84	28
5. Maritime Business Analysis	84	28
6. Operations Management	84	28
7. Maritime Logistics Technology	84	28
8. Leadership and Managerial Skills	84	28
9. Intercultural Negotiation	84	28
10. Dissertation or Project work or Professional internship with Report	840	42



Second proposal

MSc in Maritime Logistics