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MASTER LEVEL MODULE DESCRIPTIONS

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Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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EXECUTIVE SUMMARY

This document is a summary of D3.2.3 master level modules. It is the description that can be downloaded online, and serves the purpose of awareness raising. The purpose is to reach teachers teaching at this level.

Background

Due to the changing business and working environment (digitalization, tailoring and ever-growing customer requirements, re-engineered processes, and new business models), also the logistics discipline has changed and grown over the recent decades. As the world is changing, the companies must change and develop simultaneously as well to maintain and improve their competitiveness. This change of operating environment has also meant changes in knowledge, skills, and competences needed in different logistics functions, in different industries along the SC - not only in transportation and warehousing, but also in SC planning and management, material handling etc. According to the Logistics Performance Index by the World Bank, all CB area countries have improvement needs in their logistics skills and competences, some countries being already somewhat more advanced, some demanding significant skill and competence improvement/updating actions. The need to develop the skills and competences, however, is common for all CB countries. All countries are facing a lack of skilled and competent workforce in all level logistics duties, ranging from operative tasks to management duties. The level of existing logistics skills and competences, on the other hand, is in direct relation with the level and contents of logistics education being offered. As the markets are changing, the logistics education must change simultaneously. There is thus a common CB wide challenge to make the logistics education to match the needs of the changing markets and consequently to make the whole area more competitive and successful in the global competition. This deliverable provides a summary of the curricula of the different modules at master level.

Structure of the document

Body of this document is structured by the main cross-sectoral and cross-professional areas, which have been identified as the ones most requiring increase of competences across the whole CB area-new technologies, holistic understanding of logistics and managerial skills.

1. NEW TECHNOLOGIES

The modules in this area are aiming at improving the competencies related to the uptake and usage of new technologies.
Unilog offers four different modules related to new technologies.

Simulation Models for Production Logistics

This module comprise an introduction to discrete event simulations for production logistics as well as a use case which the students will use for the exercise.
The objectives are to describe the key elements and main applications for modeling, simulation and optimization in the development of logistics and to apply analytical and experimental methods and tools to analyze resource and flow efficiency of sustainable production and logistics systems.
This module is not suitable for distance learning in its current form.

Technology Introduction in Logistics- Risks and Opportunities

This module will look into risks and opportunities related to technology introduction in logistics. The focus will be on SC transparency and SC risk management on technologies.

The intended learning outcomes are to identify and analyze collaborative and information sharing between different parts of an organization as well as between different companies within a SC of physical products. Furthermore, to specify a producer's needs regarding its logistics system based on environmental, social and economic perspectives and compile possible solutions.
The module can be provided as an online module.

Material Handling & Technology Support

This course will look into technical support for material handling, i.e. warehouse logistics as well as production logistics. The focus will be on storage systems, conveyer belts and different forms of AGV and picking robots.
After the course your students should have:
- Knowledge on warehouse systems
- Knowledge of how AGVs, conveyer belts etc. work and can be interconnected.
- Open HCI interactions – risks and safety

This course will partly also use a digital twin for letting the students investigate the different functions, in case they do not have access to a lab. This course can be used as an online course

Supply Chain Simulations

This module gives an introduction to simulation methods and the key elements of simulation. Furthermore, introduction tools and simulation applications for modelling and optimization of SC and finally it will allow the students to apply methods and tools for analyzing SC.
This module is not suitable for distance teaching.

2. HOLISTIC UNDERSTUNDING OF LOGISTICS

The requirement analysis showed a clearly need for a holistic understanding of logistics for future employees within the field of logistics.
We have therefore developed eight modules contributing to this at master level.

Lean and Green Logistics

This module is related to a sustainable logistics. The students will learn how to apply the lean methodology in logistics in order to increase the sustainability.

Sustainability Models in Logistics

This module will give an overview of different sustainability model that exists in the logistics. The intended learning outcomes are:

- Learn about how different factors influences the sustainability
- Acquire knowledge about different sustainability models
- Apply methods for calculating carbon footprint and concept of total costs

Supply Chain Transparency and the Role of Interoperable Systems

This module gives an introductiont to different types ofinteroperability and discusses the main security issues. As a solution to reduce these problemes we look into single windows and federated platforms.
The students will

- learn different forms of interoperability
- learn security issues
- learn about different solutions for a transparent SC (cloud, federated platform)

  The module is suitable for distance teaching.

Lean and Optimisation

The main focus of the module is to learn about how lean management can support sustainability consideration in logistics with foucs on all 7+2 waste components. This advanced course on lean and green builds upon previous knowledge (see bachelor modules) on lean principles. The method used is VSM

Advanced Strategic Supply Chain Management

This module examines basic concepts and basic principles of logistics and SC management based on logistics industry survey. By characterizing concepts it examines the main activities and technologies in this industry related to planning, implementation, control and analysis. Special attention is given to development and application principles of information technologies in logistics

and in management of SCs, what includes modern technologies (web-based information systems, electronic data exchange, bar codes/RFID, GIS, GPS). It examines practical cases of logistics and SC management in supply, production, distribution, transport, inventory and warehouse management processes.

The module focuses on essential technologies for effective SC networks management. It emphasizes the strategic, tactical and operational issues along with the applications of quantitative/qualitative models for decision support in SCs networks. Explains SCs' performance measurement methods and tools. SC networks' concepts and best practices are considered as well. Students are introduced to the SC reference model and show how to customize the SC reference model for the particular needs of a company based on its SC strategy.

Advanced Business Logistics

This module provides an insight in modern/advanced business logistics, planning of logistic processes related to and in-depth analysis. The study course presents: in-depth analysis of the issues of business logistics and problem solutions. Special methods with the help of which it is possible to optimize inventory management, transportation, location of objects (palettes, boxes, containers and other objects) and other logistics processes. Students acquire the theoretical material, independently analyze and evaluate case studies, make decisions and substantiate their choice and take part in discussions

KPI and Logistics Quality Management

This module deals with key performance indicators and how these can be used within quality management in the logistics sector. The main KPIs addressed are
- Shipping Time: Spot potential issues in your order fulfilment process
- Order Accuracy: Monitor the degree of incidents
- Delivery Time: Track your average delivery time in detail
- Transportation Costs: analyze all costs from the order placement to delivery
- Warehousing Costs: Optimize the expenses of your warehouse
- Number of Shipments: Understand how many orders are shipped
- Inventory Accuracy: Avoid problems because of inaccurate inventory
- Inventory Turnover: Track how many times your entire inventory is sold
- Inventory to Sales Ratio: Identify a potential overstock.

2.1. SCOR model

This module will first give an introduction of the SC operating and management methods and tools. Introduction to SCOR as the SC operations reference model and management tool basics to improve SC management decisions. .

3. COMMERCIAL LAW

Again, based on the gap analysis carried out at the early stage of the project, a need for competence development specifically at management level related to commercial law was identified. Consequently, the Unilog Consortium provides three modules related to this area.

FIATA Regulations

This module is delivering information on FIATA's role of uniting and regulating the freight forwarding industry worldwide. To improve the quality of services rendered by freight forwarders by developing and promoting uniform forwarding documents, standard trading conditions. FIATA's documents and forms to establish a uniform standard for use by freight forwarders worldwide.
After the completion, the students should be abler to analyze cases, improve the quality and efficiency of services by using FIATA documents, regulations and standards.

Transport regulations

The module focuses on transport regulation on EU level (road, rail, sea, air, multimodal). During the module students study integrated joint European transport space regulations, analyze and apply them to real life cases, based on EU legislation on transport.
The objective is to develop tactical and strategic analysis skills, learn to work out suggestions on how to manage and what regulations to consider to plan and organize transport between different countries and regions, how to access transportation markets, how to develop and improve processes, based on regulations

Logistics regulations

Fast technological and social change mean that government legislation is likely to be out-of-date or redundant by the time it is implemented. Regulations can't keep up with new tech. What to consider?

The module focuses on how new technologies and digitalization (AI, robotics, drones, AGV etc.) affects logistics regulations on EU level.

Where to get more information?

If any of these courses seems relevant for you and your educational offers, please contact our project manager
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