Cooperation-Network for logistics and nautical education focusing on
Inland Waterway Transport in the Danube corridor
supported by innovative solutions

NELI Inland Navigation and Ports Course - curriculum -

(Act. 3.2, Period 4)

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1. List of abbreviations

- **CCNR** Central Commission for the Navigation of the Rhine
- **CEVNI** European Code for Inland Waterways
- **DFND** Fundamental provisions concerning navigation on the Danube
- **DC** Danube Commission
- **EC** European Commission
- **EDINNA** Education in Inland Navigation
- **IWT** Inland water transport
- **SIGNI** Sign and Signal on Inland Waterways
- **UNECE** United Nations Economic Commission for Europe

2. Scope of document

The scope of this document is to define the curriculum of the model course called Inland Navigation and Ports.

3. Objectives

The trainees who successfully graduate from this course will gain theoretical knowledge in the various fields of inland water transport (IWT) and they will be able to:

- navigate on the European inland waterways according to navigation agreements with agent,
- sails and manoeuvres ensuring safe operation of the vessel in all condition on inland waterways
- consider economic and ecological aspects of ship operation in order to use vessel efficiently
- know necessary manoeuvres for every navigation situation,
- apply knowledge regarding the hydrology of inland waterways,
- use of traffic supervision tools and ability to apply them,
- apply knowledge of precautions in emergency situation,
- apply the provisions of international ports regulations,
- take precautions to prevent pollution of the environment and use relevant equipment.

4. Course framework

4.1 Target group

This course can be applied in the education system of the students of secondary, vocational schools or universities who specialize in logistics, transport engineering or naval architecture. Under the continuous training system, this course is also addressed to the crew members who want to be promoted to the operational and management level. This course is divided into two levels. The first level will have general contents from different areas of IWT. The second level will have particular form such as the description of inland Danube ports.

4.2 Instructors

Instructors who will conduct this course will consist of the qualified teachers or the staff who have theoretical and practical experiences from the sector IWT. They will be able to apply instructional techniques and training methods.

4.3 Training facilities and equipment

This subchapter includes all facilities, equipments and devices necessary for the smooth running of the course, such as:

- a classroom,
- audio visual devices (blackboard, flipchart, video projector, projection screen, themed movies etc.),
- computers and softwares,
- a simulators,
- a training ship.

4.4 Teaching aids

All teaching aids that will be used or presented to the students or trainees are included in this subchapter such as books, textbooks, video or audio materials, maps, ppt presentations, the Internet source, various agreements, documents and regulations, etc.

5. Teaching syllabus

The curriculum of the course Inland Navigation and Ports was prepared according to the documents prepared in STCIN – Professional Competence for Management and Operational level and the curriculum of the subjects which are taught at the University of Žilina and Technical and Economical University in Budapest.

Curriculum of the modules

INLAND NAVIGATION AND PORTS

5.1. I. Module: Inland Ports

Competencies:

- *acquire knowledge regarding definition, type, area of inland ports,*
- *understand the importance of inland ports in the transport system,*
- *understand the importance of the port infrastructure work in transport development.*

This module is divided into 5 lessons

Lesson	Thematic Plan	Teaching aids and equipment
1	Chapter 1 - Definition, Classification, Division and Basic Parts 1.1 Definition of Inland Ports	ppt presentation textbooks

2	1.2 Classification of Inland Ports 1.3 Division of Inland Ports 1.4 Basic Parts of Inland Ports	
3	Chapter 2 – Role of Inland Ports in the Transport System 2.1 Functions of Inland Ports 2.2 Modes of Transport 2.3 Multimodal Transport	
4	Chapter 3 – Infrastructure 3.1 Facilities 3.2 Devices	
5	Danube Inland Ports 1 Inland Ports on the Upper Danube 2 Inland Ports on the Middle Danube 3 Inland Ports on the Lower Danube	ppt presentations web sites of inland Danube ports

5.2 II. Module: Waterways

Competencies:

- acquire knowledge regarding the main European inland navigation network
- will be able to establish the type of vessel according to the waterway

This module is divided into 5 lessons

Lesson	Thematic Plan	Teaching aids and equipment
1	Chapter 1 – Inland Navigation Network 1.1 Historical Development of Inland Navigation Network 1.2 Present Role of Inland Water Transport in Europe and the Importance of Inland Navigation Network 1.3 Network of the European Waterways	ppt presentation textbooks maps of the European waterways
2	Chapter 2 – Inland Waterway Characteristics 2.1 Basic Parameters of Fairway and Hydro Technical Works 2.2 Tributaries and Canals	
3	Chapter 3 – Division of Waterways 3.1 Types of European Waterways 3.2 Main European Waterways 3.3 Classification of Waterways according to AGN	
4	Chapter 4 – Inland Waterways Vessels 4.1 Type of Vessels	
5	Danube River 1 Upper Danube	ppt presentations map of the Danube

	2 Middle Danube 3 Lower Danube	

5.3 III. Module: Navigation Technologies

Competencies:

- acquire knowledge regarding navigation and its technologies,
- will be able to control of nautical parameters of the ship use the navigation equipments trough deck Instruments and Appliance,
- acquire knowledge regarding the fairway and the principles to signalling and its limits,
- understand the importance of the professional competencies of crew members.

This module is divided into 5 lessons.

Lesson	Thematic Plan	Teaching aids and equipment
1	Chapter 1 – Navigation on Inland Waterways 1.1 Hydrological, Meteorological and Morphografical Effects Conditions for Navigation of Vessels 1.2 Safety Navigation Rules 1.3 Login Duty to the System RIS 1.4 Manoeuvring Characteristics of Different Types of Inland Waterway Vessels Chapter 2 – Technical Navigation Equipment of the Ship 2.1 Self-Propelled Vessel 2.2 Push Vessels 2.3 Tow Vessels	ppt presentation textbooks
2	Chapter 3 – Control of Nautical Parameters of the Ship Trough Deck Instruments and Appliance 3.1 The Control of the Navigational Situation with the Radar 3.2 The Communication between Vessels, with the Waterway Authorities, the Lock and the Own Crew on Board 3.3 The Conduct the Vessel within the Signalling Limits of the Fairway 3.4 The Control under the GPS, AIS, ENC-Inland ECDIS	
3	Chapter 4 – Fairway and the Principles to Signalling and its Limits 4.1 The Signalling on the Free Flow Section 4.2 The Signalling on he Canalised Section Chapter 5 – The Water Level of the Inland Waterways 5.1 The Monitoring of the Water Level and its	

	Importance 5.2 The Typical Movement Changes of the Navigational Conditions on the River Distances 5.3 The Reports of NtS and the Sail through the Troublesome Distances	
4	Chapter 6 – Improvement of Navigation Conditions on Inland Waterways 6.1 Updating the Navigational conditions and Heavy Sections on the Waterway (from NtS, from the I-ENC) 6.2 The Navigational Time Duration and Expected Times (ETA) at the Selected Points on the Fairway 6.3 The Schedule of the Navigation Time-Table in the Accordance with the Established Working Navigation Mode 6.4 The Schedule of the Vessel´s Downtime on the Fairway at r.km	
5	Chapter 7 – The Utilization of the Cargo Capacity of Vessels and Vessel formation for transport of cargo 7.1 The Deadweight of vessels and Cargo Capacity 7.2 The Electronic Communication with the Carriers and Port Operators 7.3 The Cargo Deployment and Stowage on the Board 7.4 The Engine Performance and Arrangement of Vessel formation Chapter 8 –The Ship Crew 5.2 Professional Training Requirements for Inland Navigation Personnel 8.2 Distribution of the Crew Members on Board According to Professional Competencies 8.3 Provisions Relating to Minimum Safety Personnel for Different Types of Inland Waterway Vessels	

5.4 IV. Module: Laws on the Danube

Competencies:

- to acquire knowledge regarding navigation law on the Danube

This module is divided into 5 lessons

Lesson	Thematic Plan	Teaching aids and equipment

1	Chapter 1 – Important International IWT Related Organisations 1.1 UNECE – United Nations Economic Commission for Europe 1.2 EC – European Commission 1.3 CCNR - Central Commission for the Navigation of the Rhine 1.4 DC - Danube Commission	ppt presentation
2	Chapter 2 – Navigation rules/regulations for Danube region 2.1 CEVNI – European Code for Inland Waterways 2.2 SIGNI – Sign and Signal on Inland Waterways 2.3 DFND – Fundamental provisions concerning navigation on the Danube 2.4 Supervisory Rules on the Danube River	
3	Chapter 3 – Technical Requirements for Inland vessels 3.1 Recommendations on Harmonised Europe – Wide Technical Requirements for Inland Navigation Vessels – Resolution 61 of UNECE 3.2 Directives CEE 3.3 Rec CD	
4	Chapter 4 – Minimum requirements for issuance of Boatmaster Certificate in Inland Navigation 4.1 Recommendations on Minimum Requirements for the Issuance of Boatmaster's Certificates in Inland Navigation with View to their Reciprocal Recognition for International Traffic – Resolution no. 31 rev. – UNECE 4.2 Council Directive 96/50/EC of 23 July 1996 on the Harmonization of the Conditions for Obtaining National Boatmasters' Certificates for the Carriage of Goods and Passengers by Inland Waterway in the Community 4.3 DC Recommendations on the Organization of Training of Seafarers – CD/SES/75/24/2010	
5	Chapter 5 – Transport of goods by Inland Waterways 5.1 Budapest Convention on the Contract for the Carriage of Goods by inland Waterway – CMNI 5.2 ADN – European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways 5.2 ADN-D - Rules on Carriage of Dangerous Goods by Danube	ppt presentations map of the Danube

5.5 V. Module: *IWT and the Environmental Protection*

Competencies:

- acquire knowledge regarding the environmental protection,
- understanding the importance of prevention of pollution of water and air by ships,
- acquire knowledge regarding the measurement for safe transport of dangerous goods by IWT.

This module is divided into 5 lessons

Lesson	Thematic Plan	Teaching aids and equipment
1	Chapter 1 - Statistical Analysis of the Environmental Pollution by IWT in Comparison with Other Transport Modes 1.1 Pollution of Soil 1.2 Pollution of Water 1.3 Pollution of Air	ppt presentation textbooks maps of the European waterways
2	Chapter 2- Prevention of Pollution of Inland Waterways by Vessels 2.1 Recommendation for the Control of Pollution of Inland Water (Resolution No. 21/2007 of UNECE) Chapter 3 - Technical Requirements for Inland Vessels on order to Prevent Pollution of Water and Abatement of noise 3.1 Prevention of Water Pollution and Abatement of Noise Produced by Vessels (Resolution No. 61/2006 of UNECE)	
3	Chapter 4 - Reception facilities for the transfer of waste generated on board ships on European inland waterways 4.1 Reception Facilities for The transfer of waste Generate on Board Ships on European Inland Waterways/1991 of UNECE , amended in 2000,2002 and 2003 4.2 Convention on the collection , the depth and the reception of waste which coming from Rhine and Inland Navigation - 2007 4.3 Recommendation on organization of the collection of waste from vessels which sailing on the Danube – CD/SES 72/9/2009	
4	Chapter 5 – Prevention of air pollution by IWT 5.1 Innovative technologies to reduce emissions to air	
5	Chapter 6 - Transport of dangerous goods by inland waterway Chapter 7 – Sustainable development	ppt presentations map of the Danube

6. Timetable of the course

No.	Module	ratio %	Teaching aids and equipment used
I.	Waterways	25	ppt presentation textbooks web sites of inland Danube ports
II.	Inland Ports	25	ppt presentation textbooks maps of the European waterways map of the Danube
III.	Navigation technologies	20	ppt presentation textbooks
IV.	Laws on the Danube	15	ppt presentation
V.	IWT and the environmental protection	15	ppt presentation textbooks maps of the European waterways
-	**Total**	**100**	**-**

7. Sources and references

- UNECE Resolutions
- CCNR Regulations
- Danube Commission recommendations
- European directives
- National regulations