

COURSE LIST
2009 – 2013 SERIES

Course description	DANGEROUS, HAZARDOUS AND HARMFUL CARGOES					
Course code	Year	II	Number of credits			
	Semester	3				
Faculty	Navigation and Naval Transport Naval Electromechanics	The number of hours per semester / activities				
Domain	Naval Engineering and Navigation	Total	C	S	L	P
Specialization	Navigation and Maritime and River Transport Electromechanics Electrotechnics	28	14	-	14	-

Approved,
UMC RECTOR
Prof. Cornel PANAIT, Ph.D.

Approved,
Romanian Naval Authority

PROMOTION AND IMO COURSES DEPARTMENT DIRECTOR,
Sen.lect.Dr.eng. Liviu Constantin STAN

Course type DF -fundamental, DD -engineer, domain specific, DS -specialized, DC -complementary	DS
Course optionality: DI -required, DO -optional, DF - facultative	DF

Previous courses	Obligations (conditioned)	
	Recommended	

Objectives	<p>This course aims to meet the mandatory minimum requirements for seafarers and shore-based personnel for familiarization, basic safety training and instruction in accordance with Section A-II/2 and B-V/5 of the STCW Code, and also the basis for training set out in chapter 1.3 of the IMDG Code for shore-based personnel.</p> <p>Due to the vastly different environment on a ship as compared to ashore, this course is designed for both target groups, although the time needed for individual topics will vary. As an example, for seafarers more time is given for stowage , and for shore-based personnel more emphasis will be put in package manufacturing and testing.</p>
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Content (descriptors)	<p>1. CREATING THE INTERNATIONAL LEGAL FRAMEWORK FOR CARRYING DANGEROUS GOODS. O.M.I INTERNATIONAL MARITIME CONVENTIONS AND DANGEROUS GOODS</p> <ul style="list-style-type: none">- Need of the international agreements governing the manner of handling and transportation of dangerous goods- Reasons for the O.M.I. establishment and development of Maritime Dangerous Goods International Code- Security code for solid bulk cargoes- International Code for construction and equipment of vessels carrying chemicals in bulk- International Code for the construction of ships for transport of liquefied gases in bulk- International Convention for the Life Safety at Sea (SOLAS 1974)- International Convention for the Prevention of Pollution from Ships, 73/74- Description and distinction between dangerous goods and harmful substances- Committees and subcommittees of the O.M.I. structure- Subcommittee for Dangerous, Solid Goods and Containers- Recommendations of the UN and OMI Dangerous Goods <p>2. THE INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG CODE). IDENTIFICATION AND CLASSIFICATION OF DANGEROUS GOODS. PHYSICO-CHEMICAL PROPERTIES.</p> <p>Information about code occurrence and amendments:</p> <ul style="list-style-type: none">- Application of Code- The structure and presentation of the new code (ed. 2002)- Basic terminology used for chemical properties- Basic terminology used for physical properties <p>Classes of goods having chemical risks</p> <ul style="list-style-type: none">- Explosives- Gases- Flammable Liquids- Flammable Solids- Oxidizing substances and organic peroxides- toxic and infectious substances- Radioactive materials- Corrosives- Miscellaneous substances and dangerous articles <p>3. CLASSIFICATION OF DANGEROUS GOODS: UN SYSTEM USE BY O.M.I. THE INTERNATIONAL MARITIME DANGEROUS GOODS CLASSIFICATION (IMDG Code)</p> <ul style="list-style-type: none">- Principles of the UN classification- packing groups- General Index. Numerical Index.- Dangerous Cargoes List- Proper Shipping Name- United Nations Numbers- Substances and articles not included in the alphabetical and numerical
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index:

- Characteristics of nine classes of goods and their divisions
- Classification of unusual parts (batteries: wet, acid, dried, etc.).
- Waste products
- solid bulk cargoes
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- 4. PACKAGING OF DANGEROUS GOODS. MANUFACTURING AND TESTING OF THE PACKAGES, CONTAINERS FOR SOLID GOODS AND BULK LIQUID TANKS**
- Introduction and terminology
- Packaging group, various limited to 400kg or 450l
- Compatibility and packaging risks, choosing appropriate packaging
- Definitions, rules
- Performance tests (drop, tightness, pressure hydraulic)
- packages mark after testing
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- 5. SHIPPING DANGEROUS GOODS. DANGEROUS GOODS IN LIMITED QUANTITIES. TRANSPORT OF DANGEROUS GOODS**
- Generalities
- Marking and labeling packages
- Documents for dangerous goods
- Stacking and Stacking principles: general and specific requirements
- Segregation. Principles, requirements and targets. Tables of segregation. Segregation of packages and CTU
- Fire prevention
- Transport of dangerous goods in limited quantities
- Traffic of containers and packing goods into containers. Safety measures for CTU transport with dangerous goods
- Transport of dangerous goods with ro-ro ships
- Transport of dangerous goods by barge, on board
- Marine pollutants. Special requirements. Documents. Packing, marking and labeling
- incidents reporting involving dangerous goods
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- 6. THE INTERNATIONAL MARITIME DANGEROUS GOODS CODE SUPPLEMENT**
- Supplement Content
- safety measures Guide adopted by OMI, OLI, UN and EU on the use of CTU
- Emergency measures for ships carrying dangerous goods (Emergency Schedule - EMS)
- Medical First Aid Guide
- Reporting Procedures
- Recommendations for safe use of pesticides on board
- Transport of nuclear materials (INF Code)
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- 7. SAFE TRANSPORT OF DANGEROUS GOODS IN PORT AREA**
- Description of the recommendations applicable to packaged dangerous goods, bulk liquid dangerous goods (liquefied gas), solid bulk cargo

	- Discussing the differences between the OMI recommendations and national regulations
Competences	
Test and evaluation	Exercises and case studies

Final grade (percentage)	- answers to exam / colloquium / practical work	80%
	- certified applied activities / lab / practical work / project, etc..	20%
Bibliography	<p>Beziris, A., Bamboi, Gh., <i>Transport Maritim</i>, vol.I și II, Editura Tehnică, București, 1988;</p> <p>Biaciu, I., Ionescu, D., <i>Încărcarea, stivuirea și transportul mărfurilor cu nave maritime</i>, Editura Tehnică, București, 1976;</p> <p>Nae Valeriu: "Manipularea mărfurilor periculoase și potențial periculoase la bordul navelor maritime", Constanța 2003</p> <p><i>International Safety Guide for Oil Tankers & Terminals</i>, 4th edition, ICS/OCIMF, London, Witherby & Co. Ltd., 1996</p> <p><i>Safety of Life at Sea Convention (SOLAS'74)</i>;</p> <p>STCW 95: <i>International Convention on Standards of Training, Certification and Watch keeping for Seafarers</i>, 1978, as amended in 1995</p> <p>MARPOL 73/78: <i>International Convention for the Prevention of Pollution from Ships</i></p> <p><i>International Convention for Safe Containers</i>, 1972 (CSC), (IMO Sales No. 282E)</p> <p>Consolidated edition of the <i>International Maritime Dangerous Goods Code – Ammendament 34-08</i> (Sales No. 200E)</p> <p>Supplement to the IMDG Code and any amendments thereto 2006 edition ammendaments 34-08 (IMO Sales No. 210E)</p> <p><i>Code of Safe Practice for Stowage and Securing 2003 Consolidated edition</i> (IMO Sales No. 292E)</p> <p><i>Wall chart of IMO Dangerous Goods Labels, Marks and Signs</i> 2008 edition (IMO Sales No. 223E).</p> <p><i>Recommendations on the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas 2007 Edition</i> (IMO Sales No. 290E).</p> <p><i>IMO/ILO/UN ECE Guidelines for Packing Cargo in Cargo Transport Units (CTUs)</i>.</p> <p><i>Recommendations on the Safe Use of Pesticides in Ships</i>.</p> <p><i>National law affecting the carriage of dangerous goods in ships and their handling in port areas</i>.</p> <p><i>United Nations Recommendations on the Transport of Dangerous Goods ("Orange Book")</i>, 16th revised edition 2009.</p> <p><i>Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria</i> (4th revised edition 2003) (ISBN 92-1-139087-7).</p> <p><i>Recommendations on the Transport of Dangerous Goods: Amendment 2 to the Manual of Tests and Criteria (4th revised edition)</i> (ISBN: 92-1-139125-3)</p> <p><i>Technical Instructions for the Safe Transport of Dangerous Goods by Air and</i> Supplement, 2009-2010 EDITION ISBN 978-92-9231-176-6</p> <p><i>Basel Convention on the Control of Transboundary Movements of Hazardous</i></p>	

	<p><i>Wastes and their Disposal.t</i> <i>European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2009 Edition</i> <i>Convention concerning International Carriage by Rail (COTIF) 1999 edition</i> <i>Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) edition 2009</i> ISBN: 9788086206394 International Air Transport Association (IATA) <i>Dangerous Goods Regulations</i> 51st Edition <i>Shippers Guide to Loading and Securement of Packaged Hazardous Materials/ Dangerous Goods in Intermodal Equipment</i> 2009 edition Sax, N. Irving and Richard J Lewis, Sr., <i>Dangerous Properties of Industrial Materials</i>, Three Volume Print Package, 11th Edition ISBN: 978-0-471-47662-7 <i>Hawley's Condensed Chemical Dictionary</i>, 15th Edition ISBN: 978-0-471-76865-4 E. Mayer, <i>Chemistry of Hazardous Materials</i> 4th edition ISBN-13: 9780131127609 F C Hess, <i>Chemistry Made Simple</i> ISBN 0-385-18850-1 <i>Regulations for the Safe Transport of Radioactive Material - Requirements</i> 2005 edition</p>				
List of needed materials	<p>Instructor Manual. National rules for handling, storage and transportation of dangerous goods. National rules on ports, port terminals and warehouses National rules for hazardous installations, as those who handle and store chemicals or other hazardous products. Instructions for shipping companies. Handout producers and transporters of dangerous goods Set of documents required under national legislation regarding the handling and transport of dangerous goods.</p>				
Balance of spent hours	Chapter nr.	Course Hours	Seminar Hours	Laboratory Hours	Project Hours
	Total hours				
	Evaluation				
	Total	28 hours			

Lecturer Position, title, first name, name	Signature
Sen.lect.Dr.eng. Zus Noel Mircea	
Head of chair Position, title, first name, name	Signature
Prof. Zidaru Nicolae, Ph. D	
Head of IMO Department Position, title, first name, name	Signature
Sen.lect.Dr.eng. Liviu Stan	

Legend: C-course, S-seminar, L- Laboratory or simulator activities, P- project or practical work