



MES OF UKRAINE
NATIONAL TRANSPORT UNIVERSITY

Catalogue

of selective educational components

of Separated Structural Unit
«Danube Institute of Water Transport
of National Transport University»

Operation of Ship Technical Systems and
Complexes
full-time

2026

Catalogue User Guide

The educational programme for any specialisation at the Separated Structural Unit "Danube Institute of Water Transport of the National Transport University" comprises both compulsory and elective components. Compulsory components typically contain the normative content of the educational programme as defined by the higher education standard and are mandatory for all students enrolled on a given educational programme. Elective components are developed by the respective departments with the aim of providing opportunities for advanced study within a particular educational programme, accommodating the personal interests of learners, and fostering soft skills in accordance with the demands of the labour market.

Elective components are those components offered by the higher education institution for study by students of higher education, with the purpose of more fully meeting their educational and qualification needs, addressing the requirements of society, and shaping the character of the future water transport officer. In accordance with the Regulations on the Procedure for the Exercise by Students of the National Transport University of the Right to Choose Academic Disciplines, and pursuant to Paragraph 15 of Part One of Article 62 of the Law of Ukraine "On Higher Education", students of higher education are entitled to select educational components within the scope stipulated by the relevant educational programme and curriculum, in a volume constituting no less than 25% of the total number of ECTS credits prescribed by the educational-professional programme (no less than 10% for specialisations that provide access to professions subject to additional regulation). Students are furthermore entitled to select educational components offered within other educational programmes.

The study of elective educational components commences from the second academic year (third semester) for students with a programme duration of 3 years and 10 months, and from the first academic year (first semester) for students with a programme duration of 2 years and 10 months.

A student who has not determined their selection of elective educational components and has not submitted a completed application form within the prescribed deadlines shall be enrolled on those educational components which the Directorate deems necessary for the optimisation of the numerical composition of academic groups.

A student may not unilaterally withdraw from the educational components they have selected. Unauthorised withdrawal from the study of educational components shall result in academic arrears, on the grounds of which the student may be expelled from the Institute.

Following the final formation and approval of academic groups for the study of elective educational components, the relevant information pertaining to elective educational components shall be entered into the student's individual study plan. From this point onwards, the selected elective educational component becomes compulsory for the student concerned.

The Catalogue constitutes a systematised inventory of educational components pertaining to the elective strand of the educational-professional programmes of the Separated Structural Unit "Danube Institute of Water Transport of the National Transport University". The formation of the Catalogue adheres to the principles of alternativeness, competitiveness, and student-centredness (educational components may be regarded as elective only insofar as they are elective from the perspective of the student). The content of

elective educational components takes into account the requirements of currency, research intensity, and practical orientation. The educational components listed in the Catalogue are directed towards the deepening and enhancement of the general competencies set out in the Standard for Speciality 271 River and Sea Transport and the refinement of the special (professional) competencies defined by the educational-professional programmes.

The principal criteria for the formation of the Catalogue of Elective Educational Components are as follows:

- demand from stakeholders (the relevance of the educational component from the standpoint of the development of water transport, the demand for corresponding competencies in the labour market, and related considerations);
- staffing provision;
- educational and methodological provision;
- material and technical provision.

Зміст

Administration of Computer Networks

Geography of Navigation and World Ocean Routes

Operation of Water Transport Vehicles

Operation of Specialized Vessels

Maritime Human Resource Management

Carriage of Dangerous Goods by Water Transport

Legal Regulation of Labor Relations in the Maritime Economic Complex

History of Navigation and Oceanography

Danube River Sailing Directions

Sailing Directions and Navigational and Hydrographic Equipment of Waterways and Water Areas

Shipboard Practical Training on Vessels of 500 GT or More

Shipboard Practical Training on Vessels of Less than 500 Gross Tonnage in Coastal Navigation

Industrial sailing/practical training on river vessels with a gross tonnage of less than 500 GT

Industrial sailing/practical training on vessels with a main propulsion plant of 750 kW or more

Industrial (Seagoing) Training Practice on Vessels with a Main Propulsion Power of 750 kW or More in Coastal Navigation

Industrial (Seagoing) Training Practice on River Vessels with a Main Propulsion Power of 750 kW

Ship Survivability Management

Ship Power Plants and Auxiliary Equipment

Microprocessor Technology

Ship Repair and Technical Maintenance of Vessels

Shipboard Computers and Computer Networks

Shipboard Automated Electric Power Plants and Control Systems

Theory of Heat Engines

Marine Engineering

Technical Systems of Navigation and Radiocommunication

Fundamentals of Electrical and Radio Engineering and Electronics

Electric Propulsion Plants

Electronics and Electronic Control Systems

Electrical Apparatus

Energy-Efficient Technologies in Shipboard Electrical Systems

Installation, Commissioning, and Maintenance of Electrical Equipment

Computer Graphics and 3D-Modeling

Descriptive Geometry and Engineering

Ecological and Technogenic Safety

Ecological Management in Water Transport

Materials Science and Technology

Mathematical Processing of Navigational Information

Media Literacy and Information Security

Statistical Methods for Analysis and Modeling of the Operation of Technical Systems in Water Transport

Effective Communication in Professional Activities

Ethical and Religious Tolerance in Multinational Ship Crews

Leadership and Team Interaction Management (Teambuilding)

Logic and Critical Thinking

Maritime Industry Psychology

Mindfulness Practice for Seafarers

Political Science and International Security

Professional Integrity and Gender Equality at Sea

Academic Writing

Socio-Political Studies

Business English

Bulgarian for Professional Purposes

Introduction to the Bulgarian Language

Business Bulgarian

Practical Course of Bulgarian

Modern Bulgarian Language

Introduction to German

Business German

German for Specific Purposes

Practical German Language Course

Modern German

Business Romanian

Practical Romanian language course

Romanian language for specific purposes

Modern Romanian language

Introduction to the Romanian language

Administration of Computer Networks

National Transport
University

Administration of Computer Networks

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Vyacheslav Tryshyn

Contact information Email: trv.argent@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component The educational component “Computer Network Administration” is aimed at developing students’ theoretical knowledge and practical skills in the design, configuration, operation, and maintenance of computer networks used in modern shipboard, port, and shore-based information and technical systems. The course provides an understanding of the principles of operation of local and global networks, network services, addressing and routing systems, as well as the fundamentals of cybersecurity. The acquired competencies are essential for the effective operation of automated control systems, navigation and information complexes, and communication facilities in the maritime and inland waterway sectors.

Subject of study this educational component includes the principles of computer network administration, network protocols and services, methods for designing and maintaining local and distributed networks, as well as tools for ensuring the reliability and security of network infrastructure. The course covers issues of physical and logical network organization, configuration of network equipment, administration of server services, network monitoring, and diagnostics. Special attention is paid to the application of computer networks in ship management systems, port information systems, and integrated transport networks.

Interdisciplinary connections.

The educational component integrates knowledge from:

- **technical sciences:** computer science, computer engineering, automation, and telecommunications – for understanding the hardware and software foundations of networks;
- **navigation and engineering disciplines:** shipboard automated control systems, navigation information systems, and ship communication systems – for the practical application of network technologies in the maritime sector;
- **management sciences:** logistics, management, and transport process management – to ensure information support for managerial decision-making;
- **information security and maritime law** – to ensure compliance with safety requirements, data protection, and international standards in the field of maritime transport.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Computer Networks and Network Technologies

Topic 1. General Principles of Computer Network Design.

The concept of a computer network. Network classification. Network architectures. OSI and TCP/IP network models.

Topic 2. Physical and Data Link Layers of Networks.

Data transmission media. Wired and wireless technologies. Network equipment. Fundamentals of switching.

Topic 3. Network and Transport Layers.

IP addressing. Subnetting. TCP and UDP protocols. Basics of routing.

Topic 4. Application Layer.

Network services and protocols. DNS, DHCP, HTTP/HTTPS, FTP, SMTP.

Content Module 2. Administration and Security of Computer Networks

Topic 5. Local Area Network Administration.

Configuration of network equipment. Fundamentals of server administration. Users and access rights.

Topic 6. Network Monitoring and Diagnostics.

Tools for performance monitoring. Network traffic analysis. Typical faults and methods of troubleshooting.

Topic 7. Fundamentals of Network Security.

Information security threats. Firewalls, VPNs, network protection tools. Features of cybersecurity in the maritime sector.

Topic 8. Computer Networks in Maritime and Inland Water Transport.

Shipboard and port networks. Network integration with navigation and information systems. Requirements of international standards.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. Cisco Networking Academy – Computer Networking & Network Administration Resources [Electronic resource]. – Available at: <https://www.netacad.com>
- Internet Engineering Task Force (IETF) – RFCs: Internet Standards and Protocols [Electronic resource]. – Available at: <https://www.ietf.org/standards/rfcs/>
2. Internet Society – Networking and Internet Infrastructure Resources [Electronic resource]. – Available at: <https://www.internetsociety.org>
3. National Institute of Standards and Technology (NIST) – Computer Security & Network Management [Electronic resource]. – Available at: <https://www.nist.gov/cyberframework>
4. Microsoft Learn – Windows Server & Network Administration [Electronic resource]. – Available at: <https://learn.microsoft.com>
5. Red Hat – Linux Networking and System Administration [Electronic resource]. – Available at: <https://www.redhat.com/en/services/training>
6. CompTIA – Network+ and Security+ Resources [Electronic resource]. – Available at: <https://www.comptia.org>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: Computer Networking [Electronic resource] / Google. – Available at: <https://www.coursera.org/learn/computer-networking>
2. Coursera: Networking Basics [Electronic resource] / Cisco. – Available at: <https://www.coursera.org/learn/networking-basics>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points	
Module 1					Module 2					Module 3 – Individual Assignment (IA)			
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: <ul style="list-style-type: none">– Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8;– Current control works (verification of theoretical material mastery) – 12;– Completion of independent work assignments – 20;– Modular work № 1 – 10;– Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: <ul style="list-style-type: none">– Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20;– Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement

regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Computer Networking: A Top-Down Approach / J. F. Kurose, K. W. Ross. – 8th ed. – Pearson, 2021.
2. Data Communications and Networking / B. A. Forouzan. – 5th ed. – McGraw-Hill, 2017.
3. Computer Networks / A. S. Tanenbaum, D. J. Wetherall. – 5th ed. – Pearson, 2011.
4. Network Administration / T. Lammler. – Sybex, 2020.
5. TCP/IP Illustrated, Volume 1 / W. R. Stevens, K. R. Fall. – 2nd ed. – Addison-Wesley, 2011.

Supplementary Literature:

1. Internet Engineering Task Force (IETF) – RFC Series: Internet Protocol Standards Available at: <https://www.ietf.org/standards/rfcs/>
2. Cisco Networking Academy – Networking and Network Administration Materials Available at: <https://www.netacad.com>

Geography of Navigation and World Ocean Routes

National Transport
University

Geography of Navigation and World Ocean Routes

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Valerii Fedunov

Contact information Email: valeriy.fedunov@gmail.com

Address, classroom
number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component The educational component “Geography of Shipping and World Ocean Routes” is aimed at developing students’ systematic knowledge of the spatial organization of global shipping, the patterns of formation of maritime and inland waterways, and the specifics of their functioning within the global economy. The course provides an understanding of the geographical, natural, economic, and political factors influencing the development of shipping, as well as the formation of international transport corridors and routes. The acquired knowledge is essential for the professional activities of specialists in maritime and inland water transport related to navigation, ship operation, and the management of transport processes.

Subject of study of this educational component includes the geography of maritime and inland waterways of the world, the main shipping regions and centers, international ocean routes and transport corridors, as well as the physical and geographical conditions of their operation. The course examines the spatial distribution of sea basins, straits, canals, and ports, and their role in the global transport system. Particular attention is paid to the analysis of the impact of climatic conditions, oceanographic factors, and geopolitical processes on the organization of shipping and the safety of maritime and inland water transport.

Interdisciplinary connections.

The educational component integrates knowledge from:

- natural sciences: geography, oceanography, meteorology, and climatology – for analyzing the natural conditions of navigation and shipping;
- technical and navigational disciplines: navigation and pilotage, maritime safety, and hydrography – for the practical application of geographical knowledge in ship handling;
- economic sciences: transport economics, logistics, and international trade – for understanding the role of shipping in the global economy;
- management and legal disciplines: maritime transport management, maritime law, and international maritime organizations – for taking into account regulatory and geopolitical aspects of shipping.

The educational component program consists of the following modules:

Content Module 1. Geography of World Shipping

Topic 1. The World Ocean as a Spatial Environment for Shipping.

Geographical structure of the World Ocean. Oceans and seas. Main physical and geographical characteristics influencing shipping.

Topic 2. Sea Basins and Regions of World Shipping.

The Atlantic, Pacific, and Indian Oceans. The Arctic and Southern Oceans. The role of these regions in the global transport system.

Topic 3. Straits and Artificial Sea Canals.

Geography and significance of the Suez, Panama, and Kiel Canals. Strategic straits of the world and their role in international shipping.

Topic 4. World Seaports.

Geography of ports. Classification and specialization of ports. Port clusters and hubs of global importance.

Content Module 2. Ocean Routes and Inland Waterway Routes

Topic 5. Major Ocean Shipping Routes of the World.

Transatlantic, transpacific, and Indian Ocean routes. Their economic significance.

Topic 6. International Transport Corridors and Global Logistics Networks.

Formation and development of global transport corridors. The role of maritime transport.

Topic 7. Inland Waterways of the World.

Major river systems and canals. The importance of inland water transport in international transportation.

Topic 8. Geography of Shipping of Ukraine.

Maritime and inland waterways of Ukraine. Ports of the Black Sea and the Sea of Azov. The Danube River in the international transport system.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>
3. World Bank – Maritime Transport & Global Trade Routes [Electronic resource]. – Available at: <https://www.worldbank.org/en/topic/transport>

Educational Resources:

Online Courses (MOOCs):

1. Maritime Geography Course – Online Short Course [Electronic resource] – School of Shipping. – Available at: <https://schoolofshipping.co.za/product/maritime-geography-course-online-short-course/>
2. Basic Course on Shipping Geography [Electronic resource] – TradewingsEdu. – Available at: <https://tradewingsedu.com/individual-e-learning-courses/course-details/23/5>

3. Ocean MOOC [Electronic resource] – OceanMOOC (general oceanography course relevant to shipping geography). – Available at: <https://oceanmooc.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

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- Deception
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Recommended literature

Basic Literature:

1. The Geography of Transport Systems / J.-P. Rodrigue, C. Comtois, B. Slack. – 5th ed. – Routledge, 2020.
2. Maritime Geography / A. D. Couper. – 2nd ed. – Routledge, 2015.
3. Ports and the Global Economy / T. Notteboom, J.-P. Rodrigue. – Routledge, 2010.
4. Shipping and World Trade / A. E. Branch. – 4th ed. – Routledge, 2007.
5. Global Logistics and Supply Chain Management / D. Waters. – 2nd ed. – Kogan Page, 2009.

Supplementary Literature:

1. United Nations Conference on Trade and Development (UNCTAD) – *Review of Maritime Transport* (annual report). Available at: <https://unctad.org/topic/transport-and-trade-logistics>
2. International Maritime Organization (IMO) – Maritime Safety, Navigation and Shipping Routes. Available at: <https://www.imo.org>
3. World Bank – Maritime Transport and Global Trade Corridors. Available at: <https://www.worldbank.org/en/topic/transport>

Operation of Water Transport Vehicles

National Transport
University

Operation of Water Transport Vehicles

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Senior Lecturer Iryna Trofymenko

Contact information Email: trofimenkokdvt70@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component The educational component “Operation of Water Transport Vehicles” is aimed at developing in learners a comprehensive set of knowledge and practical skills related to the organization, provision, and control of operational processes of water transport vehicles in maritime and inland waterways. The discipline covers issues of technical, navigational, commercial, and safety-related operation of vessels and auxiliary floating craft, as well as the interaction of vessels with port and shore-based infrastructure. Studying this discipline ensures the training of specialists capable of operating effectively within the water transport system, taking into account modern technological and regulatory requirements.

Subject of study of the educational component comprises the operational processes of vessels and other water transport means, including their technical maintenance, intended use, management of operational modes, and the обеспечение of navigational safety. The course examines the specific features of operating maritime and inland vessels, auxiliary fleets, floating technical facilities, as well as port and navigational structures. Particular attention is paid to the organization of water transport operations, the interaction of vessels with hydraulic engineering structures, and compliance with international and national regulatory requirements.

Interdisciplinary connections.

The educational component integrates knowledge from:

- technical disciplines: ship theory and structure, ship power plants, ship auxiliary systems – to understand the technical fundamentals of operating water transport vehicles;
- navigational disciplines: navigation and pilotage, ship handling, maritime safety – to ensure the safe operation of vessels;
- technological disciplines: cargo transportation technology, port technologies – for organizing the transport process;
- legal and management disciplines: maritime and inland waterway law, international conventions, water transport management – to ensure compliance with regulatory requirements and effective management.

The educational component program consists of the following modules:

Content Module 1. General Fundamentals of Operating Water Transport Vehicles

Topic 1. Water transport as a component of the transport system. Classification of water transport vehicles. Their role in the national and global economy.

Topic 2. Technical fundamentals of vessel and floating craft operation. Operating modes, maintenance, and repair.

Topic 3. Navigational and organizational aspects of operation. Interaction of vessels with the navigational environment and hydraulic engineering structures.

Topic 4. Regulatory and legal framework for the operation of water transport vehicles. International and national requirements.

Content Module 2. Practical Aspects of Water Transport Operation

Topic 5. Operation of maritime and inland vessels under various navigation conditions. Specific features of inland waterways.

Topic 6. Operation of auxiliary and special-purpose fleets. Tugs, service, and technical vessels.

Topic 7. Safety and environmental aspects of water transport operation. Accident prevention and pollution control.

Topic 8. Interaction of vessels with port and shore-based infrastructure. Organization of port and terminal operations.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
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Learning resources

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1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
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Educational Resources:

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3. Ocean MOOC [Electronic resource] – OceanMOOC (general oceanography course relevant to shipping geography). – Available at: <https://oceanmooc.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
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Late Submission Policy.

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Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Branch, A. E. Elements of Shipping. Routledge, London & New York.
2. Stopford, M. Maritime Economics (3rd ed.). Routledge, 2009.
3. Kristiansen, S. Maritime Transportation: Safety Management and Risk Analysis. Butterworth-Heinemann, 2013.

Supplementary Literature:

1. United Nations Conference on Trade and Development (UNCTAD) – *Review of Maritime Transport* (annual report). Available at: <https://unctad.org/topic/transport-and-trade-logistics>
2. International Maritime Organization (IMO) – Maritime Safety, Navigation and Shipping Routes. Available at: <https://www.imo.org>
3. World Bank – Maritime Transport and Global Trade Corridors. Available at: <https://www.worldbank.org/en/topic/transport>
4. United Nations Conference on Trade and Development (UNCTAD). Review of Maritime Transport. <https://unctad.org/publications/series/review-maritime-transport>

Operation of Specialized Vessels

National Transport
University

Operation of Specialized Vessels

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Doctor of Philosophy (PhD) in Specialty 271 “River and Maritime Transport”, Senior Lecturer Anastasiia Trofymenko

Contact information Email: tnastya940815@ukr.net

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component The educational component “Operation of Specialized Vessels” is aimed at developing in learners systematic knowledge and practical skills related to the specific features of the technical and commercial operation of specialized types of vessels. The discipline covers issues of structural characteristics, technologies for the carriage of special cargoes, safety requirements, environmental protection, and international regulatory instruments governing the operation of such vessels. Studying this discipline is essential for the training of specialists capable of efficiently and safely operating a specialized fleet under modern conditions of maritime and inland waterway navigation.

Subject of study of the educational component comprises the operational processes of specialized vessels of various types, taking into account their structural, technological, and operational characteristics. The course examines vessels intended for the carriage of liquid, bulk, dangerous, oversized, and special cargoes, as well as passenger, auxiliary, and special-purpose vessels. Particular attention is paid to issues of voyage preparation, organization of cargo operations, compliance with the requirements of IMO international conventions, the rules of classification societies, and maritime safety standards.

Interdisciplinary connections.

The educational component integrates knowledge from:

- technical disciplines: ship theory and structure, ship power plants, ship auxiliary systems – to understand the structural and operational characteristics of specialized vessels;
- navigational disciplines: navigation and pilotage, maritime safety – to ensure the safe operation of vessels of various types;
- technological disciplines: cargo transportation technology, port technologies – for the organization of cargo operations;
- legal and management disciplines: maritime law, international maritime conventions, maritime transport management – to ensure compliance with regulatory requirements during vessel operation.

The educational component program consists of the following modules:

Content Module 1. General Principles of Operating Specialized Vessels

Topic 1. Concept and classification of specialized vessels. The role of the specialized fleet in modern shipping. Main development trends.

Topic 2. Structural features of specialized vessels. Hull, cargo spaces, and special equipment. The impact of design on operation.

Topic 3. Regulatory and legal framework for the operation of specialized vessels. IMO international conventions (SOLAS, MARPOL, STCW), codes, and recommendations.

Topic 4. Safety and environmental protection issues in the operation of specialized vessels.

Content Module 2. Operation of Specific Types of Specialized Vessels

Topic 5. Operation of tankers and vessels for the carriage of liquid cargoes. Features of cargo operations. Safety and environmental requirements.

Topic 6. Operation of bulk carriers, container vessels, and Ro-Ro vessels. Transportation technologies and organization of operations.

Topic 7. Operation of vessels carrying dangerous, heavy-lift, and oversized cargoes. Special requirements and risks.

Topic 8. Passenger, auxiliary, and special-purpose vessels. Operational features, safety requirements, and the specific characteristics of inland water transport.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>
3. World Bank – Maritime Transport & Global Trade Routes [Electronic resource]. – Available at: <https://www.worldbank.org/en/topic/transport>

Educational Resources:

Online Courses (MOOCs):

1. Maritime Geography Course – Online Short Course [Electronic resource] – School of Shipping. – Available at: <https://schoolofshipping.co.za/product/maritime-geography-course-online-short-course/>
2. Basic Course on Shipping Geography [Electronic resource] – TradewingsEdu. – Available at: <https://tradewingsedu.com/individual-e-learning-courses/course-details/23/5>
3. Ocean MOOC [Electronic resource] – OceanMOOC (general oceanography course relevant to shipping geography). – Available at: <https://oceanmooc.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

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2. International Maritime Organization (IMO) – Maritime Safety, Navigation and Shipping Routes. Available at: <https://www.imo.org>
3. World Bank – Maritime Transport and Global Trade Corridors. Available at: <https://www.worldbank.org/en/topic/transport>
4. United Nations Conference on Trade and Development (UNCTAD). Review of Maritime Transport. <https://unctad.org/publications/series/review-maritime-transport>

Maritime Human Resource Management

National Transport
University

Maritime Human Resource Management

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted by Acting Head of Department, PhD in History, Associate Professor Antonina Dorosheva

Contact information Email: dorosheva.21.12@gmail.com
Phone: +38 (067) 11-67-427

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Management of Maritime Resources» is aimed at developing future maritime industry professionals' knowledge and practical skills in effective personnel management under specific conditions of navigation. The course reveals methodological foundations of human resource management, considering cultural differences of multinational crews, psychological aspects of leadership and management on vessels. Special attention is paid to communication, decision-making in routine and emergency situations, as well as the impact of stress factors on seafarers' professional activities. The phenomenon of «human factor» is examined as a key cause of accidents, its relationship with the level of ship management automation and modern methods of improving maritime safety. Studying the discipline provides understanding of the human role in the ship management system and contributes to preparing competent, responsible, and stress-resistant leaders of maritime crews.

Subject of study of the educational component includes theoretical and practical foundations of human resource management in the maritime industry, including principles and methods of labor organization on vessels, cultural and socio-psychological characteristics of multinational crews, issues of leadership and communication, as well as processes of making managerial decisions under routine and extreme conditions. Special attention is paid to studying the «human factor» as a key element of maritime safety, the impact of automation on ship crew work, and modern approaches to minimizing risks in seafarers' professional activities.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: philosophy, psychology, cultural studies – for understanding the role of personality, intercultural differences, and moral-ethical foundations in seafarers' professional activities
- Social sciences: sociology, pedagogy, communication studies – for researching characteristics of interpersonal relations in multinational crews, forming collective interaction and professional identity
- Management sciences: management, logistics, strategic planning – for studying methods of labor organization, leadership, and making managerial decisions under routine and extreme conditions

- Technical sciences: navigation, ship handling, information technologies – for researching human interaction with automated ship management systems and the impact of technical equipment level on crew work
- Natural sciences: ergonomics, ecology, occupational hygiene – for ensuring optimal conditions of seafarers' professional activities and reducing risks associated with the "human factor"
- Professional educational components: maritime law, international maritime organizations, navigational safety – for integrating knowledge about human resource management into the regulatory-legal field and practice of maritime activities
- Medical sciences: maritime medicine, psychophysiology, stressology – for researching the impact of physical and psychological loads on crew performance and resilience during voyages

The educational component program consists of the following modules:

Content Module 1. Foundations of Maritime Human Resource Management

Topic 1. Methodological Foundations of Human Resource Management at Sea

Management of maritime resources as a component of professional training of maritime industry workers. Definition of the essence of human resource management at sea. Concept of human resource management at sea. Principles and functions of human resource management. Management methods: administrative, organizational, economic, socio-psychological. Methodological foundations of human resource management at sea: basic concepts and categories. Human factor as the main component of productive forces. Analysis of modern methods and principles of human resource management. Main aspects and levels of studying the human factor. Development of human resource management concepts: classical and modern approaches. Role of motivation in human resource management at sea.

Topic 2. Significance of Cultural Differences in Multinational Crew

Culture and its types: professional and organizational. Mental field of culture. Features of ethnic culture formation. Role and significance of mentality in forming cultural differences. Ethno-cultural stereotypes. G. Hofstede's model. «Individualism-collectivism». Power distance. «Uncertainty avoidance». «Masculinity-femininity». «Power distance in European culture. Religious component and its role in Eastern society. Religious component and its role in Western culture. Significance of cultural stereotype in forming interpersonal relations.

Topic 3. Leadership and Management on Vessels

Essence of concepts: authority, responsibility, and delegation. Power. Forms of power. Leadership fundamentals. Situational approach to leadership. Classification of management styles. Psychological aspects of personnel management. Delegation of authority. Basic principles of effective management on vessels. Management and leadership on vessels. Power, leadership, and authority. Types of emergency situations and their main stages. Leader in emergency situation conditions. Strategy of behavior in emergency situation. Management methods in emergency situations. Delegation of authority under extreme conditions. Stress and its impact on work quality on vessels.

Topic 4. Socio-Psychological Foundations of Ship Crew Management

Principles of safe ship manning (IMO Resolution A.890(XXI)). Distribution of duties on vessel. Functional duties of ship officers. Reliability of seafarer's professional activities. Factors affecting human behavior on vessel. Features of seafarer's psychological state during voyage. Workload and its impact on seafarer's psychological state. Mechanisms for ensuring seafarer's psychological stability.

Module 2. «Human Factor» at Sea

Topic 5. Decision-Making Process

Definition, awareness, and situation analysis. Formation of managerial decisions and their main models. Decision-making process under extreme and emergency situation conditions. Essence of «decision» concept. Types of decisions. Factors affecting decision-making process. Errors as cause of incorrectly made decision. Classification and assessment of managerial decisions. Factors affecting managerial decision-making process. Impact of leader's personality on decision-making process. Impact of stress on decision-making.

Topic 6. Impact of «Human Factor» on Ship Accidents

«Human factor» as the main cause of ship accidents. Scientific-theoretical analysis of «erroneous action» concept. Causes and sequence of erroneous actions in seafarer's professional activities. Role of «human factor» in ensuring error-free actions of maritime and river transport specialist. Types of emergency situations. Strategy of behavior in emergency situation. Management methods and ways of their application during emergency situation. Significance of «safe» and «unsafe» thoughts. Role of "internal" errors in creating emergency situation. Role of «external» errors in creating emergency situation. Main ways of preventing «external» and «internal» errors.

Topic 7. Impact of Automation Level on Ship Management Safety

Main features of ship personnel activities. Problems of human interaction with ship automated management systems. Ship operator errors. Comparative analysis of human and machine capabilities, rational distribution of functions between them. Practical recommendations for improving ship personnel safe work level. Features of human interaction with automated technical means. Danger of automated technical means and their impact on human workload. Impact of automation on workload. Ship automated complexes and navigation and traffic management systems. Increasing efficiency and safety of modern automated equipment operation in maritime transport. Ergonomic factors of maritime safety. Features of ship ergatic system and methods of improving its safe operation. Human role in automated ship management system.

Topic 8. Ways to Prevent Impact of «Human Factor» at Sea

Regulatory-legal framework for maritime safety regulation. Main mechanisms for reducing «human factor» impact. Socio-cultural mechanisms for preventing «human factor» impact. Main documents ensuring maritime safety. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978/95. STCW-95 Code. «Seafarers Familiarization, Training and Appraisal Procedure» instruction.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Human Element [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/Default.aspx>
2. The Nautical Institute – Human Element Resources [Electronic resource]. – Режим доступа: <https://www.nautinst.org/resources/human-element.html>
3. CHIRP Maritime – Confidential Incident Reporting [Electronic resource]. – Режим доступа: <https://chirpmaritime.org>
4. UK Marine Accident Investigation Branch (MAIB) [Electronic resource]. – Режим доступа: <https://www.gov.uk/maib-reports>
5. Transportation Safety Board of Canada – Marine [Electronic resource]. – Режим доступа: <https://www.tsb.gc.ca/eng/rapports-reports/marine/index.html>
6. Australian Transport Safety Bureau – Marine Reports [Electronic resource]. – Режим доступа: <https://www.atsb.gov.au/publications/safety-investigations/?mode=Marine>
7. National Transportation Safety Board (NTSB) – Marine Accident Reports [Electronic resource]. – Режим доступа: https://www.nts.gov/investigations/reports_aviation.html

Bridge Resource Management (BRM):

1. BIMCO – Bridge Resource Management Guidelines [Electronic resource]. – Режим доступа: <https://www.bimco.org>
2. International Chamber of Shipping (ICS) – Bridge Procedures Guide [Electronic resource]. – Режим доступа: <https://www.ics-shipping.org>
3. Standard Marine Communication Phrases (SMCP) – IMO [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/Safety/Pages/StandardMarineCommunicationPhrases.aspx>
4. Maritime and Coastguard Agency (MCA) – BRM Training [Electronic resource]. – Режим доступа: <https://www.gov.uk/government/organisations/maritime-and-coastguard-agency>

Human Resource Management:

1. International Labour Organization (ILO) – Maritime Labour Convention 2006 [Electronic resource]. – Режим доступа: <https://www.ilo.org/global/standards/maritime-labour-convention/lang--en/index.htm>
2. International Transport Workers' Federation (ITF) [Electronic resource]. – Режим доступа: <https://www.itfglobal.org/en/sector/seafarers>
3. Society for Human Resource Management (SHRM) [Electronic resource]. – Режим доступа: <https://www.shrm.org>
4. Chartered Institute of Personnel and Development (CIPD) [Electronic resource]. – Режим доступа: <https://www.cipd.co.uk>

Leadership and Management:

1. Center for Creative Leadership [Electronic resource]. – Режим доступа: <https://www.ccl.org>
2. Harvard Business Review – Leadership [Electronic resource]. – Режим доступа: <https://hbr.org/topic/leadership>
3. Mind Tools – Leadership and Management Resources [Electronic resource]. – Режим доступа: https://www.mindtools.com/pages/main/newMN_LDR.htm
4. Forbes – Leadership [Electronic resource]. – Режим доступа: <https://www.forbes.com/leadership/>

Cultural Competence:

1. Hofstede Insights – Country Comparison Tool [Electronic resource]. – Режим доступа: <https://www.hofstede-insights.com/country-comparison/>
2. Cultural Intelligence Center [Electronic resource]. – Режим доступа: <https://culturalq.com>
3. Society for Intercultural Education, Training and Research (SIETAR) [Electronic resource]. – Режим доступа: <https://www.sietarinternational.org>

Automation and Technology:

1. International Association of Maritime Universities (IAMU) – Research [Electronic resource]. – Режим доступа: <https://iamu-edu.org>
2. World Maritime University (WMU) [Electronic resource]. – Режим доступа: <https://www.wmu.se>
3. Maritime Autonomous Surface Ships (MASS) – IMO [Electronic resource]. – Режим доступа: <https://www.imo.org/en/MediaCentre/HofTopics/Pages/Autonomous-shipping.aspx>
4. Lloyd's Register – Cyber-enabled Ships [Electronic resource]. – Режим доступа: <https://www.lr.org/en/cyber-enabled-ships/>

Stress Management and Well-being:

1. International Seafarers' Welfare and Assistance Network (ISWAN) [Electronic resource]. – Режим доступа: <https://www.seafarerswelfare.org>
2. SeafarerHelp – 24/7 Helpline [Electronic resource]. – Режим доступа: <https://www.seafarerhelp.org>
3. Mission to Seafarers [Electronic resource]. – Режим доступа: <https://www.missiontoseafarers.org>
4. Sailors' Society [Electronic resource]. – Режим доступа: <https://www.sailors-society.org>

Safety Management Systems:

1. International Safety Management (ISM) Code [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/ISMCode.aspx>
2. Det Norske Veritas (DNV) – Maritime Safety [Electronic resource]. – Режим доступа: <https://www.dnv.com/maritime/>

3. American Bureau of Shipping (ABS) – Human Factors [Electronic resource]. – Режим доступа: <https://ww2.eagle.org>
4. Lloyd's Register – Safety Management [Electronic resource]. – Режим доступа: <https://www.lr.org>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: Leadership and Emotional Intelligence [Electronic resource] / Indian School of Business. – Режим доступа: <https://www.coursera.org/learn/leadership-emotional-intelligence>
2. edX: Leadership in Global Development [Electronic resource] / University of Queensland. – Режим доступа: <https://www.edx.org/learn/leadership>
3. Coursera: Leading People and Teams [Electronic resource] / University of Michigan. – Режим доступа: <https://www.coursera.org/specializations/leading-teams>
4. FutureLearn: Understanding Human Performance [Electronic resource] / Coventry University. – Режим доступа: <https://www.futurelearn.com>
5. Coursera: Organizational Behavior – How to Manage People [Electronic resource] / IESE Business School. – Режим доступа: <https://www.coursera.org/learn/managing-people-iese>
6. edX: Human Factors in Aviation Safety [Electronic resource] / TU Delft. – Режим доступа: <https://www.edx.org/learn/aviation>
7. World Maritime University – Human Resource Management in Shipping [Electronic resource]. – Режим доступа: <https://www.wmu.se/education/online-education>
8. Coursera: Managing Emotions in Times of Uncertainty & Stress [Electronic resource] / Yale University. – Режим доступа: <https://www.coursera.org/learn/manage-emotions-uncertainty-stress>

Video Resources:

1. TED Talks: Leadership [Electronic resource]. – Режим доступа: <https://www.ted.com/topics/leadership>
2. TED Talks: Work Culture [Electronic resource]. – Режим доступа: <https://www.ted.com/topics/work>
3. The Nautical Institute – Human Element Videos [Electronic resource]. – Режим доступа: <https://www.nautinst.org>
4. Safety4Sea – Maritime Training Videos [Electronic resource]. – Режим доступа: <https://safety4sea.com/videos/>
5. MAIB Safety Digest Videos [Electronic resource] / YouTube. – Режим доступа: <https://www.youtube.com/user/maibfilm>
6. Harvard Business Review – Leadership Videos [Electronic resource]. – Режим доступа: <https://hbr.org/video>

Interactive Tools and Simulators:

1. Bridge Simulation Training Resources [Electronic resource]. – Режим доступа: <https://www.warsashacademy.co.uk>
2. Full Mission Bridge Simulator [Electronic resource]. – Режим доступа: <https://www.lr.org/en/marine-shipping/>
3. Emergency Response Training Simulators [Electronic resource]. – Режим доступа: <https://www.kongsberg.com/maritime/support/training/>
4. Crew Resource Management (CRM) Training Tools [Electronic resource]. – Режим доступа: <https://www.skybrary.aero/articles/crew-resource-management-crm>

Research and Publications:

1. Safety Science Journal [Electronic resource]. – Режим доступа: <https://www.sciencedirect.com/journal/safety-science>
2. Human Factors Journal [Electronic resource]. – Режим доступа: <https://journals.sagepub.com/home/hfs>
3. Journal of Occupational and Organizational Psychology [Electronic resource]. – Режим доступа: <https://bpspsychub.onlinelibrary.wiley.com/journal/20448325>

4. International Journal of Maritime Engineering [Electronic resource]. – Режим доступа: <https://www.rina.org.uk/IJME.html>
5. WMU Journal of Maritime Affairs [Electronic resource]. – Режим доступа: <https://link.springer.com/journal/13437>
6. Maritime Policy & Management [Electronic resource]. – Режим доступа: <https://www.tandfonline.com/toc/tmpm20/current>

Organizations and Professional Bodies:

1. International Association of Maritime Universities (IAMU) [Electronic resource]. – Режим доступа: <https://iamu-edu.org>
2. The Nautical Institute [Electronic resource]. – Режим доступа: <https://www.nautinst.org>
3. International Maritime Pilots' Association (IMPA) [Electronic resource]. – Режим доступа: <https://www.impahq.org>
4. International Association of Classification Societies (IACS) [Electronic resource]. – Режим доступа: <https://iacs.org.uk>
5. Human Factors and Ergonomics Society [Electronic resource]. – Режим доступа: <https://www.hfes.org>
6. Institute of Ergonomics & Human Factors [Electronic resource]. – Режим доступа: <https://ergonomics.org.uk>

Standards and Guidelines:

1. IMO Resolution A.890(21) – Principles of Safe Manning [Electronic resource]. – Режим доступа: <https://www.imo.org>
2. STCW Convention – Standards of Training, Certification and Watchkeeping [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/STCW-Conv-LINK.aspx>
3. ISO 9001 – Quality Management Systems [Electronic resource]. – Режим доступа: <https://www.iso.org/iso-9001-quality-management.html>
4. SOLAS Convention – Safety of Life at Sea [Electronic resource]. – Режим доступа: [https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-\(SOLAS\),-1974.aspx](https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS),-1974.aspx)
5. MARPOL Convention – Pollution Prevention [Electronic resource]. – Режим доступа: [https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating

- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Flin, R. Safety at the Sharp End: A Guide to Non-Technical Skills [Electronic resource] / R. Flin, P. O'Connor, M. Crichton. – Farnham : Ashgate, 2008. – 326 p.
2. Hetherington, C. Safety in Shipping: The Human Element [Electronic resource] / C. Hetherington, R. Flin, K. Mearns // Journal of Safety Research. – 2006. – Vol. 37(4). – P. 401–411.
3. Horck, J. Getting the Best from Multicultural Manning [Electronic resource] / J. Horck. – Malmö : WMU Publications, 2005. – 178 p.
4. Reason, J. Human Error [Electronic resource] / J. Reason. – Cambridge : Cambridge University Press, 1990. – 302 p.
5. Wickens, C. D. An Introduction to Human Factors Engineering [Electronic resource] / C. D. Wickens, J. G. Hollands, S. R. Banbury, R. Parasuraman. – 2nd ed. – Upper Saddle River, NJ : Pearson, 2013. – 608 p.
6. Northouse, P. G. Leadership: Theory and Practice [Electronic resource] / P. G. Northouse. – 8th ed. – Thousand Oaks, CA : SAGE Publications, 2018. – 528 p.

Supplementary Literature:

1. Hollnagel, E. Safety-I and Safety-II: The Past and Future of Safety Management [Electronic resource] / E. Hollnagel. – Farnham : Ashgate, 2014. – 202 p.
2. Perrow, C. Normal Accidents: Living with High-Risk Technologies [Electronic resource] / C. Perrow. – Princeton, NJ : Princeton University Press, 1999. – 464 p.
3. Dekker, S. The Field Guide to Understanding 'Human Error' [Electronic resource] / S. Dekker. – 3rd ed. – Farnham : Ashgate, 2014. – 234 p.
4. Hofstede, G. Cultures and Organizations: Software of the Mind [Electronic resource] / G. Hofstede, G. J. Hofstede, M. Minkov. – 3rd ed. – New York : McGraw-Hill, 2010. – 576 p.
5. Lützhöft, M. The Impact of Culture on Communication and Teamwork: A Study of Multi-National Crews [Electronic resource] / M. Lützhöft // WMU Journal of Maritime Affairs. – 2004. – Vol. 3(2). – P. 139–160.

6. Grech, M. R. Human Error in Maritime Operations: Analyses of Accident Reports Using the Leximancer Tool [Electronic resource] / M. R. Grech, T. J. Horberry, A. Smith // Proceedings of the Human Factors and Ergonomics Society Annual Meeting. – 2002. – Vol. 46. – P. 1718–1721.

Carriage of Dangerous Goods by Water Transport

National Transport
University

Carriage of Dangerous Goods by Water Transport

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Senior Lecturer Iryna Trofymenko

Contact information Email: trofimenkokdvt70@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component The educational component “**Carriage of Dangerous Goods by Water Transport**” is aimed at developing in learners professional knowledge and practical skills related to the organization, provision, and control of the processes of transporting dangerous goods by maritime and inland waterway transport. The discipline covers the classification of dangerous goods, requirements for their packaging, marking, loading, transportation, and storage, as well as issues of safety, environmental protection, and emergency response. Studying this course is essential for training specialists capable of acting in accordance with international and national regulatory requirements.

Subject of study of the educational component comprises the processes of transporting dangerous goods by water transport, taking into account the physico-chemical properties of the cargoes, navigation conditions, and vessel operating requirements. The course examines classes of dangerous goods, risks arising during their transportation, cargo-handling technologies, requirements for vessels and crews, as well as procedures to be followed in the event of accidents, leakages, or fires. Particular attention is paid to the application of IMO international codes and conventions.

Interdisciplinary connections.

The educational component integrates knowledge from:

- technical and technological disciplines: ship theory and structure, cargo transportation technology, ship systems and equipment – to understand the conditions for the carriage of dangerous goods;
- navigational and safety-related disciplines: maritime safety, emergency and rescue training, occupational safety – to ensure transport safety;
- environmental disciplines: environmental protection, environmental safety – to prevent pollution;
- legal disciplines: maritime and inland waterway law, international conventions – to ensure compliance with regulatory requirements.

The educational component program consists of the following modules:

Content Module 1. Regulatory and General Principles of the Carriage of Dangerous Goods

Topic 1. Concept and classification of dangerous goods. Physico-chemical properties and hazards.

Topic 2. International and national regulatory documents on the carriage of dangerous goods. IMO conventions and codes (SOLAS, MARPOL, IMDG Code, ADN).

Topic 3. Packaging, marking, and documentation in the carriage of dangerous goods.

Topic 4. Requirements for vessels, crews, and ports in the carriage of dangerous goods.

Content Module 2. Practical Aspects and Safety of the Carriage of Dangerous Goods

Topic 5. Organization of cargo operations involving dangerous goods. Loading, securing, and stowage.

Topic 6. Specific features of transporting particular classes of dangerous goods (explosive, flammable, toxic, and corrosive substances).

Topic 7. Emergency situations during the carriage of dangerous goods. Crew actions and consequence mitigation.

Topic 8. Environmental safety and liability in the carriage of dangerous goods by water transport.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. Transporting packaged dangerous goods by sea – ILT (Netherlands). <https://english.ilent.nl/topics/shipping/seagoing-vessels/cargo-on-seagoing-vessels/transporting-packaged-dangerous-goods-by-sea>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>
4. World Bank – Maritime Transport & Global Trade Routes [Electronic resource]. – Available at: <https://www.worldbank.org/en/topic/transport>

Educational Resources:

Online Courses (MOOCs):

1. Maritime Geography Course – Online Short Course [Electronic resource] – School of Shipping. – Available at: <https://schoolofshipping.co.za/product/maritime-geography-course-online-short-course/>
2. Basic Course on Shipping Geography [Electronic resource] – TradewingsEdu. – Available at: <https://tradewingsedu.com/individual-e-learning-courses/course-details/23/5>
3. Ocean MOOC [Electronic resource] – OceanMOOC (general oceanography course relevant to shipping geography). – Available at: <https://oceanmooc.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

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Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

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Reassessment Policy.

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Attendance and/or Activity Policy.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

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- Cheating
- Deception
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Classroom Behavior.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Güner-Özbek, M. D. *The Carriage of Dangerous Goods by Sea*. Springer, Hamburg Studies on Maritime Affairs.
2. Stopford, M. *Maritime Economics* (3rd ed.). Routledge, 2009.
3. United Nations Economic Commission for Europe (UNECE). *Recommendations on the Transport of Dangerous Goods: Model Regulations*.
4. Kristiansen, S. *Maritime Transportation: Safety Management and Risk Analysis*. Butterworth-Heinemann, 2013.

Supplementary Literature:

1. All About Dangerous Goods (IMO Cargo): SeaRates Guide. Available at: <https://www.searates.com/blog/post/all-about-dangerous-goods-imo-cargo-searates-guide>
2. United Nations Conference on Trade and Development (UNCTAD) – *Review of Maritime Transport* (annual report). Available at: <https://unctad.org/topic/transport-and-trade-logistics>
3. International Maritime Organization (IMO) – Maritime Safety, Navigation and Shipping Routes. Available at: <https://www.imo.org>
4. World Bank – Maritime Transport and Global Trade Corridors. Available at: <https://www.worldbank.org/en/topic/transport>
5. United Nations Conference on Trade and Development (UNCTAD). *Review of Maritime Transport*. <https://unctad.org/publications/series/review-maritime-transport>

Legal Regulation of Labor Relations in the Maritime Economic Complex

National Transport
University

Legal Regulation of Labor Relations in the Maritime Economic Complex

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted by Acting Head of Department, PhD in History, Associate Professor Antonina Dorosheva

Contact information Email: dorosheva.21.12@gmail.com
Phone: +38 (067) 11-67-427_

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component The educational component “Legal Regulation of Labor Relations in the Maritime Economic Complex” is aimed at developing in higher education students systematic knowledge of the legal foundations for the organization and regulation of labor relations in the field of maritime and inland water transport. Within the discipline, the legal status of seafarers and water transport workers is examined, along with the specifics of concluding, amending, and terminating employment contracts, working conditions, working time and rest periods, occupational safety, and social protection issues. Special attention is paid to the international legal regulation of seafarers’ labor, in particular to the provisions of the Maritime Labour Convention (MLC, 2006), as well as to the correlation between international and national labor law norms. The discipline contributes to the formation of the legal culture of future specialists in the maritime economic complex and develops their ability to apply labor law provisions in professional practice.

Subject of study of the educational component comprises labor relations and related legal relations arising in the process of employing labor at enterprises of maritime and inland water transport. The course analyzes the provisions of Ukraine’s national labor legislation, special regulatory legal acts governing labor in water transport, as well as international treaties and standards in the field of seafarers’ labor. Issues of the rights and obligations of employees and employers, disciplinary and material liability, resolution of labor disputes, social security, and the protection of labor rights in the maritime economic complex are examined.

Interdisciplinary connections.

The educational component integrates knowledge from:

- legal sciences: labor law, maritime law, administrative law, international law – for a comprehensive understanding of the legal regulation of labor in the field of water transport;
- social sciences: sociology of labor, labor economics – for analyzing the socio-economic aspects of labor relations in the maritime economic complex;
- management sciences: management, human resource management – for understanding the processes of work organization, personnel policy, and crew management;
- safety-related disciplines: occupational safety, maritime safety – to ensure proper and safe working

conditions on board vessels and in ports;

– professional educational components: vessel operation, international maritime conventions, ship crew management – for the practical application of labor law norms in professional activities.

The educational component program consists of the following modules:

Content Module 1. General Principles of Legal Regulation of Labor Relations

Topic 1. Concept and system of labor law of Ukraine. Subject matter and method of labor law. Sources of labor law. Correlation between general and special regulation of labor in the field of water transport.

Topic 2. Subjects of labor relations in the maritime economic complex. Legal status of maritime and inland water transport workers. Rights and obligations of employers.

Topic 3. Employment contract: concept, content, and types. Specific features of concluding employment contracts with seafarers. Contractual form of employment. Hiring and dismissal.

Topic 4. Working time and rest time of maritime and inland water transport workers. Specific features of work regimes on board vessels. Leave, guarantees, and compensation.

Content Module 2. Special Issues of Labor Relations in the Maritime Economic Complex

Topic 5. Remuneration and social security of maritime and inland water transport workers. Guarantees and compensatory payments.

Topic 6. Occupational health and safety in water transport. Legal foundations for ensuring safe working conditions. Liability for violations of occupational safety legislation.

Topic 7. Disciplinary and material liability in labor relations. Grounds and procedures for imposing liability.

Topic 8. International legal regulation of seafarers' labor. ILO conventions, the Maritime Labour Convention (MLC, 2006). Protection of seafarers' labor rights. Procedures for resolving labor disputes.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
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- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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3. World Bank – Maritime Transport & Global Trade Routes [Electronic resource]. – Available at: <https://www.worldbank.org/en/topic/transport>

Educational Resources:

Online Courses (MOOCs):

1. International Labour Organization (ILO). – Available at: <https://www.ilo.org>
2. International Labour Organization – Maritime Labour Convention, 2006 (MLC, 2006). – Available at: <https://www.ilo.org/global/standards/maritime-labour-convention>

3. ILO NATLEX – Database of National Labour, Social Security and Related Human Rights Legislation. – Available at: <https://natlex.ilo.org>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

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Classroom Behavior.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. International Labour Organization. Maritime Labour Convention, 2006 (MLC, 2006), as amended [Electronic resource] / International Labour Organization. – Geneva : ILO, 2006.
2. International Labour Organization. Guidelines for Flag States on the Implementation of the Maritime Labour Convention, 2006 [Electronic resource] / International Labour Organization. – Geneva : ILO, 2018.
3. International Labour Organization. Guidelines for Port State Control Officers Carrying out Inspections under the Maritime Labour Convention, 2006 [Electronic resource] / International Labour Organization. – Geneva : ILO, 2016.
4. International Maritime Organization. International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended [Electronic resource] / International Maritime Organization. – London : IMO, 1974.
5. International Maritime Organization. International Safety Management (ISM) Code [Electronic resource] / International Maritime Organization. – London : IMO, 2018.

6. McConnell, M. L. *The Maritime Labour Convention, 2006: A Legal Primer* [Electronic resource] / M. L. McConnell, D. Devlin, C. Doumbia-Henry. – Leiden : Martinus Nijhoff Publishers, 2011. – 360 p.
7. Doumbia-Henry, C. *Seafarers' Rights in the Globalized Maritime Industry* [Electronic resource] / C. Doumbia-Henry. – Cambridge : Cambridge University Press, 2020. – 298 p.
8. International Transport Workers' Federation. *Seafarers' Rights: A Practical Guide* [Electronic resource] / International Transport Workers' Federation. – London : ITF, 2019.

Supplementary Literature:

1. United Nations Conference on Trade and Development (UNCTAD) – *Review of Maritime Transport* (annual report). Available at: <https://unctad.org/topic/transport-and-trade-logistics>
2. International Maritime Organization (IMO) – Maritime Safety, Navigation and Shipping Routes. Available at: <https://www.imo.org>
3. World Bank – Maritime Transport and Global Trade Corridors. Available at: <https://www.worldbank.org/en/topic/transport>
4. United Nations Conference on Trade and Development (UNCTAD). *Review of Maritime Transport*. <https://unctad.org/publications/series/review-maritime-transport>

History of Navigation and Oceanography

National Transport
University

History of Navigation and Oceanography

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted by Acting Head of Department, PhD in History, Associate Professor Antonina Dorosheva

Contact information Email: dorosheva.21.12@gmail.com
Phone: +38 (067) 11-67-427

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «History of Navigation and Oceanography» provides future specialists of maritime and river fleet with a comprehensive understanding of the development of navigation and the formation of scientific knowledge about the ocean. Studying the history of navigation allows understanding the evolution of shipping, achievements of leading maritime powers, and Ukraine's role in global maritime processes. Familiarization with the stages of oceanography development forms a scientific vision of natural conditions of navigation and modern environmental challenges. The course promotes awareness of the significance of maritime heritage for professional activities, development of analytical skills, and use of historical experience in modern fleet practice.

Subject of study of the educational component includes the main stages of navigation development and scientific knowledge about the ocean from ancient times to the present. The course examines the main periods of navigation development, the role of maritime states and peoples, their contribution to world history of trade, wars, and culture. Significant attention is paid to the Age of Discovery, evolution of shipbuilding, establishment of maritime education, and development of Ukrainian navigation. A separate part of the discipline is devoted to the origins and formation of oceanography as a science, its key expeditions and discoveries. Modern directions of oceanographic research, international programs, and environmental challenges related to ocean protection are analyzed. The discipline forms a holistic understanding of the role of navigation and oceanography in world civilization and their significance for Ukraine's economy and science.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: history, archaeology, ethnology, cultural studies – for researching navigation development in different civilizations, studying maritime culture and traditions
- Social sciences: economics, sociology, political science – for understanding the role of navigation in forming international trade, migration processes, and geopolitical relations
- Management sciences: logistics, management, strategic planning – for analyzing management of maritime transportation, ports, and maritime infrastructure

- Technical sciences: navigation, shipbuilding, hydrography – for studying technical aspects of navigation development and its impact on shipping safety
- Natural sciences: geography, geology, meteorology, ecology – for researching oceans, climatic conditions, and natural processes affecting navigation development
- Professional educational components: maritime law, international maritime organizations, navigational safety – for integrating historical knowledge into modern seafarers' professional activities
- Medical sciences: maritime medicine, physiology, occupational hygiene – for ensuring health and working capacity of crews in difficult conditions of sea voyages

The educational component program consists of the following modules:

Content Module 1. Module 1. History of Navigation: Origin, Development in Different Historical Epochs, Role and Place in Modern Economy

Topic 1. Navigation in Ancient Times

Birth of navigation. Main periods of development. Navigation of Mediterranean peoples. Egypt. Crete. Phoenicia. Carthage. Ancient Greece. Greek colonization of the Northern Black Sea region. Etruria. Ancient Rome. Navigation in Eastern countries. Mesopotamia. Persia. Polynesian voyages. Beginning of shipping on the territory of Ukraine.

Topic 2. Navigation in the Early and High Middle Ages

Development of navigation among non-European peoples. Arabs. «Travels of Ibn Battuta». China, India, and East Asia. Chinese Tang dynasty. Maritime expeditions of 1417-1419 and 1421-1422. Navigation in Medieval Europe. Celts. Brendan the Navigator. Saint Columban. Vikings, Normans, Varangians. Maritime successes of the Hanseatic League. Shift of international trade routes to the west. Contribution of Venice and Genoa to navigation development. Galleys. Maritime voyages of Slavs. Campaign of Eastern Slavs in 269 AD to Athens, Corinth, Sparta. Shipbuilding on the territory of Ukraine. First shipbuilding centers.

Topic 3. Navigation of the Late Middle Ages and Modern Period. Age of Discovery

Causes of searching for new routes that led to the Age of Discovery. Material and technical prerequisites of the Age of Discovery. First stage of the Age of Discovery. Spain and Portugal. Henry the Navigator (1394-1460). Christopher Columbus. Hernán Cortés (1485-1547). Vasco da Gama. Ferdinand Magellan (1480-1521). Second stage of the Age of Discovery. Giovanni Caboto (1425 - ca.1500). Giovanni da Verrazzano (ca.1485-1528). Jacques Cartier (1491-1557). Francis Drake (1540-1596). Navigation in the Age of Enlightenment. England. Russia. Maritime voyages and geographical discoveries of 19th - early 20th centuries. Development of maritime trade, passenger transportation, and piracy. Passenger transportation. Technical improvement of fleet. Appearance of new classes of ships. Sailing fleet. Steam engines replacing sails. Development of navigation in Ukrainian lands. Cossack fleet. Development of navigation and maritime education in Southern Ukraine at the end of 18th - beginning of 20th century.

Topic 4. Navigation in the 20th - 21st Centuries

Navigation during World War I. Main types of warships during World War I. Major naval battles of World War I. Interwar period of maritime industry development. Spread of cruise voyages. Dissemination of radio communication means. Navigation during World War II. Development of navigation in the second half of 20th century. International Economic Shipping Enterprise «Interlighter». Ukrainian Danube Shipping. Modern navigation. Problems of maritime transport development in Ukraine.

Module 2. History of Oceanography

Topic 5. Origins of Oceanography and First Concepts about the Ocean

Concepts about the ocean in ancient civilizations (Egypt, Mesopotamia, India, China, Greece, Rome). Role of navigation in developing primary knowledge about seas and oceans. Medieval knowledge: Arab navigation, Scandinavian voyages, medieval world maps. First maritime legends and myths, their influence on ocean concepts. Accumulation of knowledge about oceans and seas. Aristotle and his work «Meteorologica». Strabo and his views on the World Ocean. Ptolemy, «Geography».

Topic 6. Age of Discovery and Birth of Scientific Research

Age of Discovery of 15th-17th centuries (Columbus, Magellan, Vasco da Gama, James Cook) and their role in oceanography science development. Exploration of new continents and ocean spaces. First scientific expeditions of 17th-18th centuries, hydrography development. Formation of concepts about currents, sea depths, ocean floor relief.

Topic 7. Formation of Oceanography as a Science (19th - First Half of 20th Century)

Scientific research of 19th century (C. Darwin, Dumont d'Urville, «Beagle» expedition, etc.). «Challenger Expedition» (1872-1876) and its role in scientific formation of oceanography. Development of oceanography in 19th century in Europe, USA, and Russian Empire. Impact of World Wars I and II on maritime science development. Creation of oceanographic institutes and centers worldwide.

Topic 8. Modern Stage of Oceanography Development and Its Perspectives

Second stage of 20th century and modern methods of ocean research (satellite technologies, underwater vehicles, automatic buoys). International programs («ARGO», «GOOS», «World Ocean»). Research of individual oceans (Atlantic, Pacific, Indian, Arctic, Southern). Modern environmental challenges: pollution, climate change, ocean protection. Role of oceanography in Ukraine, perspectives of science development in global dimension.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Maritime History:

1. National Maritime Museum – Greenwich [Electronic resource]. – Available at: <https://www.rmg.co.uk>
2. Smithsonian National Museum of American History – Maritime Collection [Electronic resource]. – Available at: <https://americanhistory.si.edu/collections/maritime>
3. The Mariners' Museum and Park [Electronic resource]. – Available at: <https://www.marinersmuseum.org>
4. Australian National Maritime Museum [Electronic resource]. – Available at: <https://www.sea.museum>
5. Mystic Seaport Museum [Electronic resource]. – Available at: <https://www.mysticseaport.org>
6. The Vasa Museum – Stockholm [Electronic resource]. – Available at: <https://www.vasamuseet.se/en>
7. Naval History and Heritage Command [Electronic resource]. – Available at: <https://www.history.navy.mil>
8. Maritime History Virtual Archives [Electronic resource]. – Available at: <https://www.maritimehistory.org>

Oceanography and Marine Science:

1. Woods Hole Oceanographic Institution (WHOI) [Electronic resource]. – Available at: <https://www.whoi.edu>
2. Scripps Institution of Oceanography [Electronic resource]. – Available at: <https://scripps.ucsd.edu>
3. National Oceanic and Atmospheric Administration (NOAA) [Electronic resource]. – Available at: <https://www.noaa.gov>
4. Ocean Exploration Trust [Electronic resource]. – Available at: <https://nautiluslive.org>
5. Schmidt Ocean Institute [Electronic resource]. – Available at: <https://schmidtocean.org>

6. Monterey Bay Aquarium Research Institute (MBARI) [Electronic resource]. – Available at: <https://www.mbari.org>
7. British Oceanographic Data Centre [Electronic resource]. – Available at: <https://www.bodc.ac.uk>
8. UNESCO – Intergovernmental Oceanographic Commission [Electronic resource]. – Available at: <https://ioc.unesco.org>

Historical Expeditions and Explorers:

1. The Challenger Expedition – Natural History Museum [Electronic resource]. – Available at: <https://www.nhm.ac.uk/our-science/collections/zoology-collections/challenger-expedition.html>
2. Royal Geographical Society – Exploration Archives [Electronic resource]. – Available at: <https://www.rgs.org>
3. Library of Congress – Exploration and Discovery [Electronic resource]. – Available at: <https://www.loc.gov/collections/exploration-and-discovery/>
4. The Age of Exploration – Encyclopedia Britannica [Electronic resource]. – Available at: <https://www.britannica.com/topic/European-exploration>
5. Captain Cook Society [Electronic resource]. – Available at: <https://www.captaincooksociety.com>
6. Ferdinand Magellan – Biography and Voyages [Electronic resource]. – Available at: <https://www.biography.com/explorer/ferdinand-magellan>

International Programs and Research:

1. Argo Float Program [Electronic resource]. – Available at: <https://argo.ucsd.edu>
2. Global Ocean Observing System (GOOS) [Electronic resource]. – Available at: <https://www.goosocean.org>
3. Census of Marine Life [Electronic resource]. – Available at: <https://www.coml.org>
4. Deep Sea Conservation Coalition [Electronic resource]. – Available at: <https://www.savethehighseas.org>
5. Ocean Tracking Network [Electronic resource]. – Available at: <https://oceantrackingnetwork.org>
6. International Seabed Authority [Electronic resource]. – Available at: <https://www.isa.org.jm>

Ukrainian Maritime Heritage:

1. Odessa Maritime Museum [Electronic resource]. – Available at: <https://museums.org.ua/museum/odeskyy-morskoy-muzej>
2. National Maritime Museum of Ukraine [Electronic resource]. – Available at: <https://nmmukraine.org>
3. Ukrainian Danube Shipping Company [Electronic resource]. – Available at: <http://www.udsc.com.ua>

Environmental and Climate:

1. Ocean Conservancy [Electronic resource]. – Available at: <https://oceanconservancy.org>
2. The Ocean Cleanup [Electronic resource]. – Available at: <https://theoceancleanup.com>
3. Marine Conservation Institute [Electronic resource]. – Available at: <https://marine-conservation.org>
4. Pew Charitable Trusts – Ocean Conservation [Electronic resource]. – Available at: <https://www.pewtrusts.org/en/projects/ending-illegal-fishing-project>
5. IPCC – Ocean and Cryosphere Report [Electronic resource]. – Available at: <https://www.ipcc.ch/srocc/>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: Oceanography: A Key to Better Understand Our World [Electronic resource] / University of Barcelona. – Available at: <https://www.coursera.org/learn/oceanography>
2. edX: Introduction to Oceanography [Electronic resource] / University of Southampton. – Available at: <https://www.edx.org/learn/oceanography>
3. FutureLearn: Exploring Our Oceans [Electronic resource] / University of Southampton. – Available at: <https://www.futurelearn.com/courses/exploring-our-oceans>
4. MIT OpenCourseWare: Introduction to Ocean Science and Engineering [Electronic resource]. – Available at: <https://ocw.mit.edu/courses/mechanical-engineering/>

5. Coursera: Age of Discovery [Electronic resource] / Universiteit Leiden. – Available at: <https://www.coursera.org/learn/age-of-discovery>
6. edX: Maritime Archaeology [Electronic resource] / University of Southampton. – Available at: <https://www.edx.org/learn/archaeology>
7. NOAA Ocean Exploration Education Resources [Electronic resource]. – Available at: <https://oceanexplorer.noaa.gov/edu/welcome.html>

Video Resources:

1. National Geographic – Ocean Series [Electronic resource]. – Available at: <https://www.nationalgeographic.com/environment/topic/oceans>
2. BBC Blue Planet II [Electronic resource]. – Available at: <https://www.bbc.co.uk/programmes/p04tjbtX>
3. TED Talks: Oceans [Electronic resource]. – Available at: <https://www.ted.com/topics/oceans>
4. Smithsonian Ocean Portal Videos [Electronic resource]. – Available at: <https://ocean.si.edu>
5. Woods Hole Oceanographic Institution – Video Library [Electronic resource]. – Available at: <https://www.whoi.edu/multimedia/>
6. CrashCourse: World History – Age of Exploration [Electronic resource] / YouTube. – Available at: <https://www.youtube.com/watch?v=3eLa0VBy5wI>
7. National Geographic – Explorers [Electronic resource]. – Available at: <https://www.nationalgeographic.com/pages/topic/explorers>

Interactive Resources:

1. Google Earth – Explore the Ocean [Electronic resource]. – Available at: <https://earth.google.com/web/@0,0,0a,22251752.77375655d,35y,0h,0t,0r/data=CgQSAggB>
2. NOAA Ocean Explorer – Interactive Map [Electronic resource]. – Available at: <https://oceanexplorer.noaa.gov/explorations/explorations.html>
3. MarineTraffic – Live Ship Tracking [Electronic resource]. – Available at: <https://www.marinetraffic.com>
4. Virtual Ship Tour – Maritime Museums [Electronic resource]. – Available at: <https://www.rmg.co.uk/cutty-sark/explore/virtual-tour>
5. NASA Ocean Color – Satellite Data [Electronic resource]. – Available at: <https://oceancolor.gsfc.nasa.gov>

Digital Libraries and Archives:

1. JSTOR – Maritime History & Oceanography [Electronic resource]. – Available at: <https://www.jstor.org>
2. Library of Congress – Maritime Collections [Electronic resource]. – Available at: <https://www.loc.gov/collections/>
3. Internet Archive – Maritime Books [Electronic resource]. – Available at: <https://archive.org/details/maritime>
4. Project Gutenberg – Exploration Literature [Electronic resource]. – Available at: <https://www.gutenberg.org>
5. Google Scholar – Ocean Sciences [Electronic resource]. – Available at: <https://scholar.google.com>

Scientific Journals:

1. Journal of Maritime Archaeology [Electronic resource]. – Available at: <https://link.springer.com/journal/11457>
2. The International Journal of Maritime History [Electronic resource]. – Available at: <https://journals.sagepub.com/home/ijh>
3. Marine Policy Journal [Electronic resource]. – Available at: <https://www.sciencedirect.com/journal/marine-policy>
4. Progress in Oceanography [Electronic resource]. – Available at: <https://www.sciencedirect.com/journal/progress-in-oceanography>
5. Deep Sea Research [Electronic resource]. – Available at: <https://www.sciencedirect.com/journal/deep-sea-research-part-i-oceanographic-research-papers>

Museums and Virtual Exhibitions:

1. The British Museum – Maritime Collections [Electronic resource]. – Available at: <https://www.britishmuseum.org>
2. Louvre Museum – Navigation and Maritime Art [Electronic resource]. – Available at: <https://www.louvre.fr/en>
3. Metropolitan Museum of Art – Maritime Collection [Electronic resource]. – Available at: <https://www.metmuseum.org>
4. Viking Ship Museum – Oslo [Electronic resource]. – Available at: <https://www.khm.uio.no/english/visit-us/viking-ship-museum/>
5. Maritime Museum of the Atlantic [Electronic resource]. – Available at: <https://maritimemuseum.novascotia.ca>
6. Exploratorium – Ocean Science [Electronic resource]. – Available at: <https://www.exploratorium.edu>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points	
Module 1					Module 2					Module 3 – Individual Assignment (IA)			
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 											Not provided by educational program and curriculum	40	100
For part-time form of education: <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from

assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Parry, J. H. The Discovery of the Sea [Electronic resource] / J. H. Parry. – Berkeley : University of California Press, 1981. – 372 p.
2. Rozwadowski, H. M. Fathoming the Ocean: The Discovery and Exploration of the Deep Sea [Electronic resource] / H. M. Rozwadowski. – Cambridge, MA : Harvard University Press, 2005. – 264 p.
3. Deacon, M. Scientists and the Sea 1650-1900: A Study of Marine Science [Electronic resource] / M. Deacon. – 2nd ed. – Aldershot : Ashgate, 1997. – 459 p.
4. Hamblin, J. D. Oceanographers and the Cold War: Disciples of Marine Science [Electronic resource] / J. D. Hamblin. – Seattle : University of Washington Press, 2005. – 344 p.
5. Rice, A. L. The Challenger Expedition: The End of an Era or a New Beginning? [Electronic resource] / A. L. Rice // Marine Biological Association of the United Kingdom. – 1999. – Vol. 79. – P. 27–48.
6. Nansen, F. Farthest North: The Epic Adventure of a Visionary Explorer [Electronic resource] / F. Nansen. – New York : Skyhorse Publishing, 2008. – 688 p.

Supplementary Literature:

1. Boorstin, D. J. The Discoverers: A History of Man's Search to Know His World and Himself / D. J. Boorstin. – New York : Random House, 1983. – 745 p.
2. Fernández-Armesto, F. Pathfinders: A Global History of Exploration [Electronic resource] / F. Fernández-Armesto. – New York : W. W. Norton, 2006. – 432 p.
3. Cunliffe, B. Facing the Ocean: The Atlantic and Its Peoples, 8000 BC-AD 1500 [Electronic resource] / B. Cunliffe. – Oxford : Oxford University Press, 2001. – 600 p.
4. Buisseret, D. The Oxford Companion to World Exploration [Electronic resource] / D. Buisseret. – Oxford : Oxford University Press, 2007. – 2 vols.
5. Earle, S. A. The World is Blue: How Our Fate and the Ocean's Are One / S. A. Earle. – Washington, D.C. : National Geographic, 2009. – 304 p.
6. Carson, R. The Sea Around Us [Electronic resource] / R. Carson. – Oxford : Oxford University Press, 1951. – 250 p.
7. Broad, W. J. The Universe Below: Discovering the Secrets of the Deep Sea [Electronic resource] / W. J. Broad. – New York : Simon & Schuster, 1997. – 432 p.

Danube River Sailing Directions

National Transport
University

Danube River Sailing Directions

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Valerii Fedunov

Contact information Email: valeriy.fedunov@gmail.com

Address, classroom
number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component The educational component “Danube River Sailing Directions” is aimed at developing professional knowledge, skills, and competencies among higher education students that are necessary for safe navigation on the Danube River, in accordance with the requirements of CESNI, ES-QIN, and the regulatory documents of the Danube Commission. The content of the educational component is focused on the training of inland navigation deck officers and river–sea vessel navigators, taking into account the international status of the Danube, harmonized European requirements for crew qualifications, and safety standards for navigation on inland waterways. During the study of the discipline, students examine the navigational and hydrographic characteristics of the Danube, the system of navigational marking, sailing directions for specific river sections, navigation conditions within the international waterway, as well as the requirements of international and national regulatory documents.

Subject of study of the educational component is the system of navigational and sailing-direction knowledge of the Danube River as an inland waterway, which encompasses the natural, hydrological, hydromorphological, and navigational conditions of navigation, as well as the rules and means for ensuring safe and efficient vessel traffic on individual sections of the river.

Interdisciplinary connections.

The educational component integrates knowledge from:

- with the humanities: history, cultural studies, maritime ethics – to foster the professional identity of a seafarer, understanding of maritime service traditions, the evolution of navigation, and the culture of interaction within international crews;
- with the social sciences: sociology, economics, political science – to develop awareness of the social structure of the crew, the role of maritime transport in the global economy and international trade, as well as contemporary geopolitical processes;
- with management sciences: management, logistics, human resource management, strategic planning – to acquire practical skills in organizing crew work, managing shipboard processes and cargo operations, and interacting with port services;

- with technical sciences: navigation, ship power plants, shipbuilding, hydrography – for the practical application of knowledge related to the operation of ship systems, navigational equipment, ensuring technical reliability, and vessel safety;
- with natural sciences: geography, oceanography, meteorology, ecology – to analyze the impact of natural and climatic conditions on voyage operations, voyage planning, and compliance with environmental regulations in the maritime environment;
- with professional educational components: maritime law, international conventions, maritime safety, ship security – to integrate theoretical knowledge into real shipboard service conditions on vessels of 500 gross tonnage or more, and to ensure compliance with international standards;
- with medical sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health of crew members, prevent occupational diseases, respond to emergency situations, and maintain working capacity during long voyages.

The educational component program consists of the following modules:

Content Module 1. General Characteristics of the Danube River

Topic 1. Geographical location and significance of the Danube River.

Topic 2. Classification of river sections.

Topic 3. Hydrological and navigational conditions.

Topic 4. System of navigational marks, light and sound signalling.

Content Module 2. Sailing Directions for Sections of the Danube River

Topic 5. Upper, Middle, and Lower Danube.

Topic 6. Navigationally hazardous sections.

Topic 7. Ports, roadsteads, and anchorages.

Topic 8. Specific features of vessel traffic on the international waterway.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. Danube Commission – Navigation on the Danube: Rules and Recommendations [Electronic resource]. – Available at: <https://www.danubecommission.org>
3. Central Commission for the Navigation of the Rhine (CCNR) – Principles of Inland Waterway Navigation and Safety [Electronic resource]. – Available at: <https://www.ccr-zkr.org>

Educational Resources:

Online Courses (MOOCs):

1. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI) – European Standard for Qualifications in Inland Navigation (ES-QIN) [Electronic resource]. – Available at: <https://www.cesni.eu>
2. United Nations Economic Commission for Europe (UNECE) – Inland Water Transport and Waterway Infrastructure [Electronic resource]. – Available at: <https://unece.org/transport/areas-work/inland-water-transport>

3. Inland Navigation Europe (INE) – Inland Waterway Transport in Europe [Electronic resource]. – Available at: <https://www.inlandnavigation.eu>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

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- Cheating
- Deception
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- Bribery

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Recommended literature

Basic Literature:

1. Carlton J. S. Marine Propellers and Propulsion [Electronic resource]. – London : Butterworth-Heinemann, 2018. – 585 p. – Available at: <https://www.sciencedirect.com/book/9780081003664/marine-propellers-and-propulsion?via=ihub=#book-description> (accessed: 02.05.2025).
2. European Standard for Qualifications in Inland Navigation (ES-QIN) / CESNI – Comité Européen pour l'élaboration de Standards dans le domaine de la Navigation Intérieure. – Європейський стандарт, міжнародний документ [Electronic resource]. – Available at: <https://www.cesni.eu/en/standards/es-qin/> (accessed: 30.08.2025).
3. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
4. Shipping and World Trade / A. E. Branch. – 4th ed. – Routledge, 2007.
5. Global Logistics and Supply Chain Management / D. Waters. – 2nd ed. – Kogan Page, 2009.

Supplementary Literature:

1. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Maritime Buoyage System and Inland Navigation Aids [Electronic resource]. – Available at: <https://www.iala-aism.org>
2. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Sailing Directions and Navigational and Hydrographic Equipment of Waterways and Water Areas

National Transport University

Sailing Directions and Navigational and Hydrographic Equipment of Waterways and Water Areas

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Valeriy Fedunov

Contact information

Email: valeriy.fedunov@gmail.com

Address, classroom number

7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours

Tuesday 14:30 – 16:00

Annotation of the educational component The educational component “Sailing Directions and Navigational and Hydrographic Equipment of Waterways and Water Areas” is aimed at developing systematic knowledge and practical skills among higher education students in the field of sailing directions and navigational and hydrographic support of navigation, taking into account the chosen specialization. The content of the educational component is adapted according to professional orientation: – maritime specialization – emphasis on maritime sailing directions, navigational and hydrographic support of sea routes, port water areas, and coastal navigation areas; – inland waterway specialization – emphasis on sailing directions for inland waterways, navigational marking of rivers, canals, and reservoirs; – combined (river–sea) specialization – a comprehensive study of sailing directions and navigational and hydrographic support of both maritime and inland waterways.

Subject of study of the educational component comprises a set of knowledge on pilotage conditions of navigation and the system of navigational and hydrographic support for the safe and efficient movement of vessels on maritime and inland waterways and within port water areas. Within the framework of the discipline, students study: pilotage characteristics of waterways and water areas, their natural and artificial features; navigational and hydrographic conditions of navigation (seabed relief, depths, currents, water levels, hydrometeorological factors); aids to navigation and navigational and hydrographic equipment (navigation marks, buoys, lighthouses, leading lines, lighting systems); hydrographic surveys, depth sounding, and the maintenance of up-to-date navigational information; pilot charts, sailing directions, and official nautical publications; as well as regulatory, legal, and international requirements for navigational and hydrographic support of navigation.

Interdisciplinary connections.

The educational component integrates knowledge from:

– with the humanities: history, cultural studies, maritime ethics – to foster the professional identity of a seafarer, understanding of maritime service traditions, the evolution of navigation, and the culture of interaction within international crews;

- with the social sciences: sociology, economics, political science – to develop awareness of the social structure of the crew, the role of maritime transport in the global economy and international trade, as well as contemporary geopolitical processes;
- with management sciences: management, logistics, human resource management, strategic planning – to acquire practical skills in organizing crew work, managing shipboard processes and cargo operations, and interacting with port services;
- with technical sciences: navigation, ship power plants, shipbuilding, hydrography – for the practical application of knowledge related to the operation of ship systems, navigational equipment, ensuring technical reliability, and vessel safety;
- with natural sciences: geography, oceanography, meteorology, ecology – to analyze the impact of natural and climatic conditions on voyage operations, voyage planning, and compliance with environmental regulations in the maritime environment;
- with professional educational components: maritime law, international conventions, maritime safety, ship security – to integrate theoretical knowledge into real shipboard service conditions on vessels of 500 gross tonnage or more, and to ensure compliance with international standards;
- with medical sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health of crew members, prevent occupational diseases, respond to emergency situations, and maintain working capacity during long voyages.

The educational component program consists of the following modules:

Content Module 1. Pilotage Support of Navigation

Topic 1. Concept and significance of pilotage.

Topic 2. Maritime, inland, and river–sea pilotage.

Topic 3. Types of sailing directions and navigational publications; nautical charts, plans, and schemes of maritime and inland waterways.

Topic 4. Notices to Mariners and correction of navigational charts.

Content Module 2. Navigational and Hydrographic Equipment of Waterways and Water

Areas

Topic 5. System of navigational marking of maritime and inland waterways.

Topic 6. Floating and fixed aids to navigation.

Topic 7. Light, radionavigation, and electronic navigation aids.

Topic 8. Hydrographic works and their significance for maritime and inland navigation.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI) – European Standards for Inland Navigation (ES-QIN, technical and safety standards) [Electronic resource]. – Available at: <https://www.cesni.eu>
3. United Nations Economic Commission for Europe (UNECE) – Inland Water Transport and Waterway Infrastructure [Electronic resource]. – Available at: <https://unece.org/transport/areas->

Educational Resources:

Online Courses (MOOCs):

1. Inland Navigation Europe (INE) – Inland Waterway Transport in Europe [Electronic resource]. – Available at: <https://www.inlandnavigation.eu>
2. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Aids to Navigation, Buoyage Systems and VTS [Electronic resource]. – Available at: <https://www.iala-aism.org>
3. International Hydrographic Organization (IHO) – Hydrographic Standards, Nautical Charts and Publications [Electronic resource]. – Available at: <https://iho.int>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Carlton J. S. Marine Propellers and Propulsion [Electronic resource]. – London : Butterworth-Heinemann, 2018. – 585 p. – Available at: <https://www.sciencedirect.com/book/9780081003664/marine-propellers-and-propulsion?via=ihub=#book-description> (accessed: 02.05.2025).
2. European Standard for Qualifications in Inland Navigation (ES-QIN) / CESNI – Comité Européen pour l'élaboration de Standards dans le domaine de la Navigation Intérieure. – Европейський стандарт, міжнародний документ [Electronic resource]. – Available at:

<https://www.cesni.eu/en/standards/es-qin/> (accessed: 30.08.2025).

3. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
4. International Maritime Organization. (2017). *International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended*. London: IMO.
5. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI). (2023). *European Standard for Qualifications in Inland Navigation (ES-QIN)*. Strasbourg: CESNI.
6. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.
7. International Hydrographic Organization (IHO). (2020). *Standards for Hydrographic Surveys (S-44)*. Monaco: IHO.
8. United Nations Economic Commission for Europe (UNECE). (2018). *European Agreement on Main Inland Waterways of International Importance (AGN)*. Geneva: UNECE.

Supplementary Literature:

1. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Maritime Buoyage System and Inland Navigation Aids [Electronic resource]. – Available at: <https://www.iala-aism.org>
2. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Shipboard Practical Training on Vessels of 500 GT or More

National Transport
University

Shipboard Practical Training on Vessels of 500 GT or More

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Training Supervisor Candidate of Technical Sciences, Senior Lecturer Iryna Trofymenko

Contact information Email: trofimenkokdvt70@gmail.com

Address, classroom
number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component Shipboard Practical Training is aimed at consolidating the knowledge and skills acquired by a higher education student during the previous period of study and at acquiring new knowledge, skills, and competencies required for a Officer of the Watch (OOW) when performing the function “Navigation at the Operational Level”, in accordance with the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended. The training also provides the higher education student with the required seagoing service (sea time) necessary for obtaining the certificate of competency of Officer of the Watch. The objectives of the practical training take into account all competency requirements for an Officer of the Watch, as specified in Table A-II/1 of the STCW Code. It is of critical importance that, in order to obtain the Officer of the Watch certificate, a higher education student must complete at least six months of the required twelve months of approved seagoing service while performing duties as part of a navigational watch under the supervision of the Master, Chief Mate, or a certified Officer of the Watch.

Organization of Shipboard Practical Training

Shipboard practical training of a higher education student on board a vessel shall be conducted under the supervision of qualified officers (the Master, Chief Mate, or Officer of the Watch), who are members of the navigational watch.

The documents confirming the completion of the shipboard practical training programme include: a duly completed Training Record Book for a candidate for the certificate of competency as a Deck Officer, a performance appraisal (character reference), a Seafarer’s Discharge Book (copy), a Certificate of Sea Service, and a practical training report, all completed in accordance with the requirements specified in the relevant sections.

Interdisciplinary connections.

The educational component integrates knowledge from:

– with the humanities: history, cultural studies, maritime ethics – to foster the professional identity of a seafarer, understanding of maritime service traditions, the evolution of navigation, and the culture of interaction within international crews;

- with the social sciences: sociology, economics, political science – to develop awareness of the social structure of the crew, the role of maritime transport in the global economy and international trade, as well as contemporary geopolitical processes;
- with management sciences: management, logistics, human resource management, strategic planning – to acquire practical skills in organizing crew work, managing shipboard processes and cargo operations, and interacting with port services;
- with technical sciences: navigation, ship power plants, shipbuilding, hydrography – for the practical application of knowledge related to the operation of ship systems, navigational equipment, ensuring technical reliability, and vessel safety;
- with natural sciences: geography, oceanography, meteorology, ecology – to analyze the impact of natural and climatic conditions on voyage operations, voyage planning, and compliance with environmental regulations in the maritime environment;
- with professional educational components: maritime law, international conventions, maritime safety, ship security – to integrate theoretical knowledge into real shipboard service conditions on vessels of 500 gross tonnage or more, and to ensure compliance with international standards;
- with medical sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health of crew members, prevent occupational diseases, respond to emergency situations, and maintain working capacity during long voyages.

The educational component program consists of the following modules:

1. Navigational Equipment

1.1. Become fully familiar with the ship's bridge layout and equipment in accordance with the Safety Management System (SMS) checklist and the duties of a navigational officer.

1.2. Demonstrate the ability to operate:

- NAVTEX, including selection of message categories and transmitting stations;
- Weather Fax (if fitted);
- Speed log;
- Bridge control equipment used during manoeuvring (engine telegraph, whistle, internal communication systems).

1.3. Assist in replacing recording paper in navigation equipment (NAVTEX, course recorder, echo sounder, Weather Fax, GMDSS printer).

Become familiar with the location and purpose of navigation and emergency equipment powered by emergency sources of electrical supply.

1.4. Identify the location of BNWAS (Bridge Navigational Watch Alarm System) alarm buttons.

1.5. Identify the location of microphones and loudspeakers of the closed-bridge communication system (if fitted).

1.6. Demonstrate the ability to set up and operate AIS.

1.7. Demonstrate understanding of the operating principles of the Voyage Data Recorder (VDR / S-VDR) and identify the location of the control panel, main recording unit, and protective capsule.

1.8. Participate in pre-arrival and pre-departure checks of steering gear and navigation equipment in accordance with the checklist.

1.9. Participate in the preparation and transmission of AMVER reports.

2. Electronic Position Fixing and Navigation Systems

Demonstrate understanding of the basic principles of hyperbolic navigation systems.

Explain the operating principles of satellite navigation systems.

Demonstrate knowledge of GPS operation, configuration, and limitations.

Explain GPS errors and why GPS positions cannot always be plotted directly on charts.

3. Echo Sounders

Demonstrate understanding of echo sounder principles.

Explain a simple block diagram of an echo sounder.

Identify factors affecting the speed of sound in water and echo sounder errors.

4. Gyro and Magnetic Compasses

Explain Earth's magnetic field and ship's deviation.

Determine compass deviation and variation.

Calculate true course and bearings from compass data and plot them on charts.

5. Steering Control Systems

Explain the operating principles of the autopilot.

Demonstrate steering by magnetic and gyro compass.

Demonstrate correct helmsman watch handover procedures.

6. Ship Reporting Systems

6.1. Assist in preparing and transmitting mandatory ship reports (ETA / ETD).

6.2. Communicate with VTS stations as required.

7. Bridge Team Management

Practice the use of VHF communication, including handheld radios.

Understand the role of the pilot within the bridge team.

Participate in bridge team briefings and decision-making processes.

8. Distress, Search and Rescue (SAR)

Identify distress, urgency, and safety signals.

Demonstrate knowledge of GMDSS procedures, including MF/HF, VHF DSC, EPIRB, Inmarsat C.

Assist with routine tests and maintenance of GMDSS equipment.

Maintain entries in the GMDSS logbook under supervision.

9. Ship Handling and Manoeuvring

9.1. Use ship manoeuvring data, including turning circles and stopping distances.

9.2. Demonstrate knowledge of berthing, unberthing, anchoring, and man overboard procedures.

10. Cargo Spaces, Hatch Covers, and Ballast Tanks

Inspect cargo spaces and hatch covers and prepare damage reports.

Participate in inspection, maintenance, and operation of hatch covers.

Assist in inspections of ballast and fresh water tanks and preparation of reports.

11. Seaworthiness and Stability

Use stability data, trim and strength tables.

Explain actions in case of loss of buoyancy and principles of watertight integrity.

12. Leadership and Teamwork Skills

12.1. Apply basic principles of shipboard personnel management.

12.2. Demonstrate knowledge of relevant international maritime conventions (SOLAS, MARPOL, STCW, COLREG).

12.3. Apply decision-making, task and workload management, and bridge resource management principles.

Assessment methods

– Test control

– Written control works

– Interviews based on covered topic materials

– Written frontal questioning of students

– Frontal, individual, and combined oral questioning

– Express control

– Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI) –

European Standards for Inland Navigation (ES-QIN, technical and safety standards) [Electronic resource]. – Available at: <https://www.cesni.eu>

3. United Nations Economic Commission for Europe (UNECE) – Inland Water Transport and Waterway Infrastructure [Electronic resource]. – Available at: <https://unece.org/transport/areas-work/inland-water-transport>

Educational Resources:

Online Courses (MOOCs):

1. Inland Navigation Europe (INE) – Inland Waterway Transport in Europe [Electronic resource]. – Available at: <https://www.inlandnavigation.eu>
2. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Aids to Navigation, Buoyage Systems and VTS [Electronic resource]. – Available at: <https://www.iala-aism.org>
3. International Hydrographic Organization (IHO) – Hydrographic Standards, Nautical Charts and Publications [Electronic resource]. – Available at: <https://iho.int>

Assessment

The final assessment of the educational component is based on the following criteria:

- Accuracy and completeness of the completed practice documentation;
- Reference/characteristics from the place of practical training (if available);
- Results of the defense/presentation of the practice report.

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Carlton J. S. Marine Propellers and Propulsion [Electronic resource]. – London : Butterworth-Heinemann, 2018. – 585 p. – Available at: <https://www.sciencedirect.com/book/9780081003664/marine-propellers-and-propulsion?via=ihub=#book-description> (accessed: 02.05.2025).
2. European Standard for Qualifications in Inland Navigation (ES-QIN) / CESNI – Comité Européen pour l'élaboration de Standards dans le domaine de la Navigation Intérieure. – Европейський стандарт, міжнародний документ [Electronic resource]. – Available at: <https://www.cesni.eu/en/standards/es-qin/> (accessed: 30.08.2025).
3. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
4. International Maritime Organization. (2017). *International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended*. London: IMO.
5. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI). (2023). *European Standard for Qualifications in Inland Navigation (ES-QIN)*. Strasbourg: CESNI.
6. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.
7. International Hydrographic Organization (IHO). (2020). *Standards for Hydrographic Surveys (S-44)*. Monaco: IHO.

8. United Nations Economic Commission for Europe (UNECE). (2018). *European Agreement on Main Inland Waterways of International Importance (AGN)*. Geneva: UNECE.

Supplementary Literature:

1. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Maritime Buoyage System and Inland Navigation Aids [Electronic resource]. – Available at: <https://www.iala-aism.org>
2. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Shipboard Practical Training on Vessels of Less than 500 Gross Tonnage in Coastal Navigation

National Transport University	Shipboard Practical Training on Vessels of Less than 500 Gross Tonnage in Coastal Navigation
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	Higher education level – first (bachelor's)
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	Class days, class times, classroom: will be available according to the schedule at the link http://www.ntu.edu.ua/studentam/rozklad/
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Department of Navigation and Operation of Technical Systems in Water Transport

Training Supervisor Senior Lecturer Valerii Fedunov

Contact information Email: valeriy.fedunov@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component Shipboard Practical Training on Coastal Vessels is aimed at consolidating the theoretical knowledge acquired by higher education students and at developing the practical skills and competencies required to perform the duties of an Officer of the Watch during the operation of coastal vessels. The practical training ensures the acquisition of the required seagoing service (sea time) in accordance with the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, and forms professional competencies in the fields of navigation, ship handling, communications, manoeuvring, and maritime safety. It is of critical importance that, in order to obtain the Officer of the Watch certificate, a higher education student must complete at least six months of the required twelve months of approved seagoing service while performing duties as part of a navigational watch under the supervision of the Master, Chief Mate, or a certified Officer of the Watch.

Organization of Shipboard Practical Training

Shipboard practical training of a higher education student on board a vessel shall be conducted under the supervision of qualified officers (the Master, Chief Mate, or Officer of the Watch), who are members of the navigational watch.

The documents confirming the completion of the shipboard practical training programme include: a duly completed Training Record Book for a candidate for the certificate of competency as a Deck Officer, a performance appraisal (character reference), a Seafarer's Discharge Book (copy), a Certificate of Sea Service, and a practical training report, all completed in accordance with the requirements specified in the relevant sections.

Interdisciplinary connections.

The educational component integrates knowledge from:

– with the humanities: history, cultural studies, maritime ethics – to foster the professional identity of a seafarer, understanding of maritime service traditions, the evolution of navigation, and the culture of interaction within international crews;

- with the social sciences: sociology, economics, political science – to develop awareness of the social structure of the crew, the role of maritime transport in the global economy and international trade, as well as contemporary geopolitical processes;
- with management sciences: management, logistics, human resource management, strategic planning – to acquire practical skills in organizing crew work, managing shipboard processes and cargo operations, and interacting with port services;
- with technical sciences: navigation, ship power plants, shipbuilding, hydrography – for the practical application of knowledge related to the operation of ship systems, navigational equipment, ensuring technical reliability, and vessel safety;
- with natural sciences: geography, oceanography, meteorology, ecology – to analyze the impact of natural and climatic conditions on voyage operations, voyage planning, and compliance with environmental regulations in the maritime environment;
- with professional educational components: maritime law, international conventions, maritime safety, ship security – to integrate theoretical knowledge into real shipboard service conditions on vessels of 500 gross tonnage or more, and to ensure compliance with international standards;
- with medical sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health of crew members, prevent occupational diseases, respond to emergency situations, and maintain working capacity during long voyages.

The educational component program consists of the following modules:

1. Become fully familiar with the ship’s bridge, as required of a navigational officer, in accordance with the Safety Management System (SMS) checklist.
2. Demonstrate the ability to operate:
gyro and magnetic compasses;
echo sounders, speed logs, and AIS.
3. Assist in replacing recording paper in recording devices such as NAVTEX, course recorder, echo sounder, Weather Fax, GMDSS printer, etc.
Become familiar with the location and purpose of all navigational and emergency equipment powered by emergency sources of electrical supply.
4. Practice the use of VHF communication equipment, particularly while keeping watch on the bridge and using handheld radios (walkie-talkies).
Shipboard radio communications and GMDSS.
5. Demonstrate the ability to use manoeuvring data, including turning circles and stopping characteristics, and to take into account the effects of displacement, draught, trim, speed, and under-keel clearance on turning diameter and stopping distance.
Manoeuvring characteristics of coastal vessels;
Berthing and anchoring procedures.
6. Actions in emergency situations.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI) – European Standards for Inland Navigation (ES-QIN, technical and safety standards) [Electronic resource]. – Available at: <https://www.cesni.eu>
3. United Nations Economic Commission for Europe (UNECE) – Inland Water Transport and Waterway Infrastructure [Electronic resource]. – Available at: <https://unece.org/transport/areas-work/inland-water-transport>

Educational Resources:

Online Courses (MOOCs):

1. Inland Navigation Europe (INE) – Inland Waterway Transport in Europe [Electronic resource]. – Available at: <https://www.inlandnavigation.eu>
2. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Aids to Navigation, Buoyage Systems and VTS [Electronic resource]. – Available at: <https://www.iala-aism.org>
3. International Hydrographic Organization (IHO) – Hydrographic Standards, Nautical Charts and Publications [Electronic resource]. – Available at: <https://iho.int>

Assessment

The final assessment of the educational component is based on the following criteria:

- Accuracy and completeness of the completed practice documentation;
- Reference/characteristics from the place of practical training (if available);
- Results of the defense/presentation of the practice report.

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Carlton J. S. Marine Propellers and Propulsion [Electronic resource]. – London : Butterworth-Heinemann, 2018. – 585 p. – Available at: <https://www.sciencedirect.com/book/9780081003664/marine-propellers-and-propulsion?via=ihub=#book-description> (accessed: 02.05.2025).
2. European Standard for Qualifications in Inland Navigation (ES-QIN) / CESNI – Comité Européen pour l'élaboration de Standards dans le domaine de la Navigation Intérieure. – Європейський стандарт, міжнародний документ [Electronic resource]. – Available at: <https://www.cesni.eu/en/standards/es-qin/> (accessed: 30.08.2025).
3. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
4. International Maritime Organization. (2017). *International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended*. London: IMO.

5. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI). (2023). *European Standard for Qualifications in Inland Navigation (ES-QIN)*. Strasbourg: CESNI.
6. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.
7. International Hydrographic Organization (IHO). (2020). *Standards for Hydrographic Surveys (S-44)*. Monaco: IHO.
8. United Nations Economic Commission for Europe (UNECE). (2018). *European Agreement on Main Inland Waterways of International Importance (AGN)*. Geneva: UNECE.

Supplementary Literature:

1. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Maritime Buoyage System and Inland Navigation Aids [Electronic resource]. – Available at: <https://www.iala-aism.org>
2. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Industrial sailing/practical training on river vessels with a gross tonnage of less than 500 GT

National Transport University	Industrial sailing/practical training on river vessels with a gross tonnage of less than 500 GT.
	Higher education level – first (bachelor's)
	Class days, class times, classroom: will be available according to the schedule at the link http://www.ntu.edu.ua/studentam/rozklad/

Department of Navigation and Operation of Technical Systems in Water Transport

Training Supervisor Senior Lecturer Valerii Fedunov

Contact information Email: valeriy.fedunov@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Tuesday 14:30 – 16:00

Annotation of the educational component. Industrial Sailing Practice on River Vessels with a Gross Tonnage of Less Than 500 GT is a type of practical training for higher education students, conducted in accordance with the curriculum, educational program, and the Regulations on the Organization and Conduct of Practical Training for Higher Education Students at the National Transport University. The practice is aimed at consolidating theoretical knowledge, developing and enhancing professional skills necessary for future work in river and inland water transport, as well as gaining initial professional experience as a crew member. The training provides the acquisition of a seafaring record required by the provisions of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 78/95) and develops professional competencies in shiphandling, navigation, communication, vessel maneuvering, and maritime safety. It is particularly important that, in order to obtain a diploma as a watchkeeping officer, a student must serve at least six out of twelve months of approved service performing duties as part of the navigation watch under the supervision of the captain, chief mate, or watchkeeping officer.

Organization of Shipboard Practical Training

Shipboard practical training of a higher education student on board a vessel shall be conducted under the supervision of qualified officers (the Master, Chief Mate, or Officer of the Watch), who are members of the navigational watch.

The documents confirming the completion of the shipboard practical training programme include: a duly completed Training Record Book for a candidate for the certificate of competency as a Deck Officer, a performance appraisal (character reference), a Seafarer's Discharge Book (copy), a Certificate of Sea Service, and a practical training report, all completed in accordance with the requirements specified in the relevant sections.

Interdisciplinary connections.

The educational component integrates knowledge from:

- with the humanities: history, cultural studies, maritime ethics – to foster the professional identity of a seafarer, understanding of maritime service traditions, the evolution of navigation, and the culture of interaction within international crews;
- with the social sciences: sociology, economics, political science – to develop awareness of the social structure of the crew, the role of maritime transport in the global economy and international trade, as well as contemporary geopolitical processes;
- with management sciences: management, logistics, human resource management, strategic planning – to acquire practical skills in organizing crew work, managing shipboard processes and cargo operations, and interacting with port services;
- with technical sciences: navigation, ship power plants, shipbuilding, hydrography – for the practical application of knowledge related to the operation of ship systems, navigational equipment, ensuring technical reliability, and vessel safety;
- with natural sciences: geography, oceanography, meteorology, ecology – to analyze the impact of natural and climatic conditions on voyage operations, voyage planning, and compliance with environmental regulations in the maritime environment;
- with professional educational components: maritime law, international conventions, maritime safety, ship security – to integrate theoretical knowledge into real shipboard service conditions on vessels of 500 gross tonnage or more, and to ensure compliance with international standards;
- with medical sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health of crew members, prevent occupational diseases, respond to emergency situations, and maintain working capacity during long voyages.

The educational component program consists of the following modules:

Fully familiarize oneself with the ship’s wheelhouse/bridge as required of a navigation officer according to the safety management system checklist.

Demonstrate the ability to operate and use:

- Echo sounders, logs, and AIS.
- Become acquainted with the specifics of river navigation and river pilotage;
- Learn the location and purpose of all navigational and emergency equipment powered by emergency power sources.

Practice using VHF communication equipment, especially while standing watch on the bridge and communicating via walkie-talkies.

Know river navigation signs and river marking systems.

Develop the ability to use circulation data, braking characteristics, and take into account the effects of displacement, draft, trim, speed, and keel depth on turning radius and stopping distance during maneuvers;

- Practice maneuvering in restricted river conditions.
- Perform mooring operations alongside piers and riverbanks.
- Respond effectively in emergency situations and take appropriate actions during accidents.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI) – European Standards for Inland Navigation (ES-QIN, technical and safety standards) [Electronic resource]. – Available at: <https://www.cesni.eu>
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Educational Resources:

Online Courses (MOOCs):

1. Inland Navigation Europe (INE) – Inland Waterway Transport in Europe [Electronic resource]. – Available at: <https://www.inlandnavigation.eu>
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3. International Hydrographic Organization (IHO) – Hydrographic Standards, Nautical Charts and Publications [Electronic resource]. – Available at: <https://iho.int>

Assessment

The final assessment of the educational component is based on the following criteria:

- Accuracy and completeness of the completed practice documentation;
- Reference/characteristics from the place of practical training (if available);
- Results of the defense/presentation of the practice report.

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

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Violations of academic integrity include:

- Academic plagiarism
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- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Carlton J. S. Marine Propellers and Propulsion [Electronic resource]. – London : Butterworth-Heinemann, 2018. – 585 p. – Available at: <https://www.sciencedirect.com/book/9780081003664/marine-propellers-and-propulsion?via=ihub=#book-description> (accessed: 02.05.2025).
2. European Standard for Qualifications in Inland Navigation (ES-QIN) / CESNI – Comité Européen pour l'élaboration de Standards dans le domaine de la Navigation Intérieure. – Європейський стандарт, міжнародний документ [Electronic resource]. – Available at: <https://www.cesni.eu/en/standards/es-qin/> (accessed: 30.08.2025).
3. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
4. International Maritime Organization. (2017). *International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended*. London: IMO.

5. European Committee for Drawing up Standards in the Field of Inland Navigation (CESNI). (2023). *European Standard for Qualifications in Inland Navigation (ES-QIN)*. Strasbourg: CESNI.
6. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.
7. International Hydrographic Organization (IHO). (2020). *Standards for Hydrographic Surveys (S-44)*. Monaco: IHO.
8. United Nations Economic Commission for Europe (UNECE). (2018). *European Agreement on Main Inland Waterways of International Importance (AGN)*. Geneva: UNECE.

Supplementary Literature:

1. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) – Maritime Buoyage System and Inland Navigation Aids [Electronic resource]. – Available at: <https://www.iala-aism.org>
2. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
3. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Industrial sailing/practical training on vessels with a main propulsion plant of 750 kW or more

National Transport University	Industrial sailing/practical training on vessels with a main propulsion plant of 750 kW or more.
	Higher education level – first (bachelor's)
	Class days, class times, classroom: will be available according to the schedule at the link http://www.ntu.edu.ua/studentam/rozklad/
Department of Navigation and Operation of Technical Systems in Water Transport	
Training Supervisor Senior Lecturer Serhiy Lisovskyi	
Contact information	Email: slavayaryle@gmail.com
Address, classroom number	7 Izmailska Street, Izmail, classroom 15 (second floor)
Consultation hours	Thursday 14:30 – 16:00

Annotation of the educational component. Industrial Sailing Practice on Vessels with a Main Propulsion Plant of 750 kW or More is an integral part of the educational program for higher education students and a mandatory stage in the development of professional competencies for future specialists in water transport. The practice serves as an important link between theoretical training and real-world professional activities on seagoing and inland vessels. The purpose of the industrial sailing practice is to consolidate and deepen the theoretical knowledge acquired during studies, as well as to acquire, improve, and expand practical skills in the operation of vessels, ship propulsion plants, and technical systems under real navigation conditions. During the practice, students become familiar with shipboard organization, the performance of crew duties, maritime safety rules, occupational safety, and marine environmental protection. The practice aims to develop professional responsibility, teamwork skills within a ship's crew, and compliance with international and national regulatory requirements, including provisions of the STCW Convention, the International Safety Management (ISM) Code, and other international standards. The outcomes of the industrial sailing practice provide a foundation for further professional growth and prepare students for independent work in the field of maritime and inland water transport.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: history, cultural studies, maritime ethics – aimed at forming the professional identity of a seafarer, understanding the traditions of ship service, crew corporate culture, and codes of conduct during industrial sailing practice on seagoing and inland vessels.
- Social Sciences: sociology, economics, political science – to comprehend the socio-professional structure of the ship's crew, the role of maritime and inland water transport in international trade, and the influence of global economic and geopolitical factors on vessel operations.
- Management Sciences: management, logistics, personnel management, production organization – to acquire practical skills in organizing crew work, fulfilling official duties, and interacting with ship administration, port authorities, and shore-based structures during practice.

- Technical Sciences: navigation, ship propulsion systems, ship electrical equipment, shipbuilding – for the practical application of knowledge in vessel operation, ship system management, ensuring technical reliability, and safe vessel operation.
- Natural Sciences: geography, oceanography, hydrometeorology, ecology – to assess the impact of natural, hydrometeorological, and climatic conditions on navigation, voyage task execution, and compliance with marine and inland water environmental protection requirements.
- Specialty Educational Components: maritime law, international maritime conventions, maritime safety, ship management, ship security – for integrating theoretical knowledge into practical activities during industrial sailing practice in accordance with STCW Convention requirements, the ISM Code, and other international standards.
- Medical and Safety Sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health and efficiency of crew members, prevent occupational diseases, and develop skills for emergency and accident response during extended periods at sea.

The educational component program consists of the following modules:

General Ship Systems and Mechanisms

Familiarization with the purpose, structure, and operating principles of general ship systems. Practical study of ship pumps, compressors, fans, fuel and lubricating oil filters, heat exchangers, and desalination units. Participation in the maintenance of steering, anchor, and mooring systems. Familiarization with hydraulic drives of ship mechanisms, automated monitoring, and alarm systems. Performing duties during both navigational and port watches.

Ship Propulsion Plant (SPP)

Practical familiarization with the design and operating principles of main and auxiliary diesel engines. Study of diesel engine service systems, their operational parameters, and performance indicators. Participation in monitoring engine loads, thermal conditions, and operation during maneuvers and transient modes. Familiarization with automated SPP control systems. Control of fuel, lubricants, and water quality using shipboard rapid-testing methods.

Ship Electrical Equipment

Familiarization with the ship's main and emergency power plants and electrical supply systems. Practical study of electrical equipment in the engine room and deck machinery. Compliance with safety regulations when operating electrical equipment. Familiarization with ship electric drives, control systems, and automatic generator regulators.

Ship Survivability and Life-Saving Operations

Familiarization with ship survivability management and crew actions in emergency situations. Practical skills in flood, fire, and icing control. Participation in evacuation drills, use of lifeboats, life rafts, and personal life-saving appliances. Crew actions during grounding or emergency stranding.

Fire Safety

Familiarization with the causes of shipboard fires and systems for detection and extinguishing. Practical use of fixed and portable firefighting equipment. Crew actions upon fire detection. Use of personal protective equipment and breathing apparatus.

Internal Ship Communication and Ship Documentation

Familiarization with internal ship communication systems, procedures for command transmission, and maintenance of the engine room logbook. Compliance with established forms of command and information exchange between the engine room and the bridge.

Organization of Maintenance and Repair

Familiarization with ship maintenance organization, planning of technical service, and ship repair documentation. Participation in simple maintenance and self-repair tasks under the supervision of responsible personnel. Compliance with occupational safety and fire protection requirements during maintenance activities.

Documents confirming the completion of the industrial sailing practice program include: a completed **Training Record Book** for a candidate for the rank of ship engineer/mechanic or

electromechanic, a reference (characteristics), a copy of the seafarer's service book, a certificate of sea service, and a practice report, all prepared in accordance with the requirements set out in the relevant sections.

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. STCW – Basic Safety Training (BST) – Overview of mandatory basic safety training requirements under the STCW Convention [Electronic resource]. – Available at: <https://drtc.nl/en-us/Maritiem/TrajectTypeGroep/stcw-initial-training/TTGI/4/TTI/32>
3. Standard Marine Communication Phrases (SMCP) – Internationally accepted English phraseology for maritime communication developed by IMO [Electronic resource]. – Available at: https://en.wikipedia.org/wiki/Standard_Marine_Communication_Phrases

Educational Resources:

Online Courses (MOOCs):

1. Maritime Pro Academy – STCW Courses & Training Programs – Online maritime training programs designed to meet international standards for seafarers [Electronic resource]. – Available at: <https://marineproacademy.com/>
2. Maritime Training Academy – Maritime Training Courses – Educational courses covering ship operations, safety, and technical training for the maritime industry [Electronic resource]. – Available at: <https://maritimetrainingacademy.com/>

Assessment

The final assessment of the educational component is based on the following criteria:

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regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

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- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

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If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. WinGD – Engines X52DF. Available at: <https://www.wingd.com/en/engines/engine-types/x-df-dual-fuel/x52df/> (accessed: 27.08.2025).
2. Chapman, C. F. *Chapman Piloting & Seamanship*. New York: Hearst Books, 2021. – A comprehensive reference on ship handling, navigation, communications and safety procedures widely used in maritime training. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).
3. International Maritime Organization. (2017). *International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended*. London: IMO.
4. Gonzalez Celis, J., Ballini, F., Ölçer, A. I. *STCW Requirements in a Regulatory and Training Context*. – A detailed review of STCW competence requirements and maritime training

frameworks. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.

Supplementary Literature:

1. Sea Guided Training Program – Marine Navigation Practical Training – Practical onboard vessel training program aligned with STCW requirements [Electronic resource]. – Available at: <https://jams.edu.jo/marinepro/sea-guided-training-p-mn/>
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4. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
5. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Industrial (Seagoing) Training Practice on Vessels with a Main Propulsion Power of 750 kW or More in Coastal Navigation

National Transport University

Industrial (Seagoing) Training Practice on Vessels with a Main Propulsion Power of 750 kW or More in Coastal Navigation

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Training Supervisor Senior Lecturer Serhiy Lisovskyi

Contact information

Email: slavayaryle@gmail.com

Address, classroom number

7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours

Thursday 14:30 – 16:00

Annotation of the educational component. Industrial (Seagoing) Training Practice is an integral component of the educational programme for higher education students and a mandatory stage in the formation of professional competencies of future water transport specialists. This practice serves as an essential link between theoretical training and real professional activity on sea-going and inland waterway vessels. The purpose of the industrial (seagoing) training practice is to consolidate and deepen theoretical knowledge acquired during the course of study, as well as to obtain, improve, and expand practical skills and abilities in the operation of vessels, ship power plants, and technical systems under real navigation conditions. During the practice period, students become familiar with the organization of shipboard service, the performance of duties by crew members, navigation safety regulations, occupational health and safety requirements, and measures for the protection of the marine environment.

The practice is aimed at developing professional responsibility, teamwork skills within a ship's crew, and compliance with international and national regulatory requirements, including the provisions of the STCW Convention, the International Safety Management (ISM) Code, and other international standards. The outcomes of the industrial (seagoing) training practice provide a foundation for further professional development of students and their readiness for independent professional activity in the field of maritime and inland water transport.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: history, cultural studies, maritime ethics – aimed at forming the professional identity of a seafarer, understanding the traditions of ship service, crew corporate culture, and codes of conduct during industrial sailing practice on seagoing and inland vessels.
- Social Sciences: sociology, economics, political science – to comprehend the socio-professional structure of the ship's crew, the role of maritime and inland water transport in international trade, and the influence of global economic and geopolitical factors on vessel operations.
- Management Sciences: management, logistics, personnel management, production organization – to acquire practical skills in organizing crew work, fulfilling official duties, and interacting with ship administration, port authorities, and shore-based structures during practice.

- Technical Sciences: navigation, ship propulsion systems, ship electrical equipment, shipbuilding – for the practical application of knowledge in vessel operation, ship system management, ensuring technical reliability, and safe vessel operation.
- Natural Sciences: geography, oceanography, hydrometeorology, ecology – to assess the impact of natural, hydrometeorological, and climatic conditions on navigation, voyage task execution, and compliance with marine and inland water environmental protection requirements.
- Specialty Educational Components: maritime law, international maritime conventions, maritime safety, ship management, ship security – for integrating theoretical knowledge into practical activities during industrial sailing practice in accordance with STCW Convention requirements, the ISM Code, and other international standards.
- Medical and Safety Sciences: maritime medicine, physiology, occupational hygiene, life safety – to preserve the health and efficiency of crew members, prevent occupational diseases, and develop skills for emergency and accident response during extended periods at sea.

The educational component program consists of the following modules:

1. General Ship Systems and Machinery

During the practice period, students undergo practical training in the operation of general ship systems and machinery. The practice includes studying the purpose, design, and operating principles of ship pumps, compressors, fans, fuel and lubricating oil filters, heat exchangers, and freshwater generators. Trainees participate in the maintenance of steering, anchoring, and mooring systems, become familiar with hydraulic drives of ship mechanisms, as well as automatic monitoring and alarm systems. Duties during underway and port engine room watches are also performed.

2. Ship Power Plant (SPP)

The practice includes hands-on familiarization with the design, operating principles, and operation of the ship's main and auxiliary diesel engines. Students study internal combustion engine auxiliary systems, their operating parameters, and performance characteristics. Trainees are involved in monitoring engine load and thermal condition, as well as participating in SPP operation during manoeuvring and transient modes. Particular attention is paid to familiarization with automated control systems of the SPP and onboard express methods for monitoring the quality of fuel, lubricating oils, and water.

3. Ship Electrical Equipment

In the course of the industrial (seagoing) training practice, students become familiar with the ship's main and emergency power plants, as well as electrical power supply and distribution systems. Electrical equipment of the engine room and deck machinery is studied in practice. Special attention is paid to compliance with electrical safety regulations, familiarization with electric drives, control systems, and automatic generator regulators.

4. Ship Survivability and Rescue Operations

The practice provides familiarization with the organization of ship survivability measures and crew actions in emergency situations. Students acquire practical skills in combating flooding, fires, and icing of the vessel. Trainees participate in drills and exercises, practice evacuation procedures, the use of lifeboats, liferafts, and personal life-saving appliances, as well as crew actions in the event of grounding.

5. Fire Safety

During the practice, the main causes of shipboard fires, as well as fire detection and firefighting systems, are studied. Trainees acquire skills in using fixed and portable firefighting equipment and practice crew procedures upon fire detection. Practical use of personal protective equipment and breathing apparatus is included.

6. Internal Ship Communication and Ship Documentation

Students become familiar with internal ship communication systems and the procedures for transmitting commands between the engine room and the navigation bridge. The practice includes participation in maintaining the engine logbook and compliance with established command formats and information exchange procedures.

7. Organization of Maintenance and Repair

The practice includes familiarization with the organization of ship maintenance, maintenance planning, and ship repair documentation. Trainees participate in performing basic maintenance and minor repair tasks under the supervision of responsible personnel. Compliance with occupational health and safety and fire safety requirements during work is mandatory.

Documents confirming the completion of the industrial sailing practice program include: a completed **Training Record Book** for a candidate for the rank of ship engineer/mechanic or electromechanic, a reference (characteristics), a copy of the seafarer's service book, a certificate of sea service, and a practice report, all prepared in accordance with the requirements set out in the relevant sections.

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Shipping, World Maritime Transport and Routes [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/Safety/Pages/Default.aspx>
2. STCW – Basic Safety Training (BST) – Overview of mandatory basic safety training requirements under the STCW Convention [Electronic resource]. – Available at: <https://drtc.nl/en-us/Maritiem/TrajectTypeGroep/stew-initial-training/TTGI/4/TTI/32>
3. Standard Marine Communication Phrases (SMCP) – Internationally accepted English phraseology for maritime communication developed by IMO [Electronic resource]. – Available at: https://en.wikipedia.org/wiki/Standard_Marine_Communication_Phrases

Educational Resources:

Online Courses (MOOCs):

1. Maritime Pro Academy – STCW Courses & Training Programs – Online maritime training programs designed to meet international standards for seafarers [Electronic resource]. – Available at: <https://marineproacademy.com/>
2. Maritime Training Academy – Maritime Training Courses – Educational courses covering ship operations, safety, and technical training for the maritime industry [Electronic resource]. – Available at: <https://maritimetrainingacademy.com/>

Assessment

The final assessment of the educational component is based on the following criteria:

- Accuracy and completeness of the completed practice documentation;
- Reference/characteristics from the place of practical training (if available);
- Results of the defense/presentation of the practice report.

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature**Basic Literature:**

1. WinGD – Engines X52DF. Available at: <https://www.wingd.com/en/engines/engine-types/x-df-dual-fuel/x52df/> (accessed: 27.08.2025).
2. Chapman, C. F. *Chapman Piloting & Seamanship*. New York: Hearst Books, 2021. – A

comprehensive reference on ship handling, navigation, communications and safety procedures widely used in maritime training. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).

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Supplementary Literature:

1. Sea Guided Training Program – Marine Navigation Practical Training – Practical onboard vessel training program aligned with STCW requirements [Electronic resource]. – Available at: <https://jams.edu.jo/marinepro/sea-guided-training-p-mn/>
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Industrial (Seagoing) Training Practice on River Vessels with a Main Propulsion Power of 750 kW

National Transport University	Industrial (Seagoing) Training Practice on River Vessels with a Main Propulsion Power of 750 kW
	Higher education level – first (bachelor's)
	Class days, class times, classroom: will be available according to the schedule at the link http://www.ntu.edu.ua/studentam/rozklad/

Department of Navigation and Operation of Technical Systems in Water Transport

Training Supervisor Candidate of Technical Sciences, Senior Lecturer Valerii Shtrybets

Contact information Email: engineerlogic@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 15 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. Industrial (Seagoing) Training Practice is an integral component of the educational programme for higher education students and a mandatory stage in the formation of professional competencies of future water transport specialists. This practice serves as an essential link between theoretical training and real professional activity on sea-going and inland waterway vessels. The purpose of the industrial (seagoing) training practice is to consolidate and deepen theoretical knowledge acquired during the course of study, as well as to obtain, improve, and expand practical skills and abilities in the operation of vessels, ship power plants, and technical systems under real navigation conditions. During the practice period, students become familiar with the organization of shipboard service, the performance of duties by crew members, navigation safety regulations, occupational health and safety requirements, and measures for the protection of the marine environment.

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Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: history, cultural studies, maritime ethics – aimed at forming the professional identity of a seafarer, understanding the traditions of ship service, crew corporate culture, and codes of conduct during industrial sailing practice on seagoing and inland vessels.
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- Cheating
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Classroom Behavior.

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Recommended literature

Basic Literature:

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2. Chapman, C. F. *Chapman Piloting & Seamanship*. New York: Hearst Books, 2021. – A

comprehensive reference on ship handling, navigation, communications and safety procedures widely used in maritime training. International Convention for the Safety of Life at Sea (SOLAS) [Electronic resource]. – Available at: http://library.arcticportal.org/1696/1/SOLAS_consolidated_edition2004.pdf (accessed: 02.05.2025).

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4. Gonzalez Celis, J., Ballini, F., Ölçer, A. I. *STCW Requirements in a Regulatory and Training Context*. – A detailed review of STCW competence requirements and maritime training frameworks. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). (2018). *IALA Maritime Buoyage System*. Paris: IALA.

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1. Sea Guided Training Program – Marine Navigation Practical Training – Practical onboard vessel training program aligned with STCW requirements [Electronic resource]. – Available at: <https://jams.edu.jo/marinepro/sea-guided-training-p-mn/>
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4. International Maritime Organization (IMO) – Safety of Navigation and Voyage Planning [Electronic resource]. – Available at: <https://www.imo.org>
5. United Nations Conference on Trade and Development (UNCTAD) – Review of Maritime Transport [Electronic resource]. – Available at: <https://unctad.org/topic/transport-and-trade-logistics>

Ship Survivability Management

National Transport
University

Ship Survivability Management

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted by Acting Head of Department, PhD in Education, Associate Professor Nataliia Urum

Contact information Email: nataliiaurum@gmail.com
Phone: +380 67 160 95 18

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Ship Survivability Management» is aimed at developing students' knowledge and skills necessary to ensure the safety of the ship, crew, passengers, and cargo in emergency situations. The course covers the ship survivability plan and schemes, procedures during fires, flooding, hull damage, loss of stability, and other hazardous events. Special attention is paid to the organization of emergency parties, effective crew interaction, and the use of collective and individual protective equipment. Students acquire skills to quickly assess situations, make decisions, and act according to emergency response plans. The course also covers accident prevention measures and restoration of ship viability after incidents. Working through practical situations allows for the development of a high level of readiness for action in emergency conditions at sea.

Subject of study of the educational component is the patterns, principles, means, and methods of ensuring ship survivability in emergency situations. Specifically, this includes studying the organization and actions of the crew during firefighting, flooding, hull damage, loss of stability, as well as the application of technical and organizational measures to maintain buoyancy, stability, and ship maneuverability. The subject encompasses both theoretical foundations and practical aspects of protecting human life, preserving the ship and cargo in extreme operating conditions.

Interdisciplinary connections with:

- Humanities (history, cultural studies) – for understanding the evolution of navigation and the development of maritime safety traditions.
- Social sciences (economics, sociology) – for understanding the socio-economic consequences of maritime accidents and the role of safety in maritime transport.
- Management sciences (management, logistics) – for effective organization of crew actions during accidents and crisis situations.
- Technical sciences (shipbuilding, navigation, energy systems) – for understanding structural and technical means of ensuring ship survivability.
- Natural sciences (oceanography, meteorology, ecology) – for assessing the impact of natural factors on ship safety.

- Professional disciplines (maritime safety, maritime law, emergency rescue equipment) – for comprehensive application of knowledge in the practice of ensuring ship survivability.
- Medical sciences (medicine, hygiene, psychology) – for maintaining health, resilience, and crew readiness for action in extreme conditions.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Ship Survivability Management

Topic 1. Ship survivability management. Analysis of accident rates and main causes of ship losses. Regulatory and legal documents on ship survivability management.

Topic 2. Firefighting and hazardous concentrations of harmful substances on board. Causes of fires, fire classification, and fire extinguishing means. Fire alarm systems, means of detecting and eliminating gas contamination, methods of combating hazardous concentrations of harmful substances in ship premises.

Topic 3. Organization of ship survivability management. Crew actions as part of emergency parties. Structure of emergency parties, crew member duties in case of emergency. Stages of combating water leaks, fires, and smoke.

Topic 4. Prevention of ship emergency damage. Main accident prevention measures. Ship technical condition monitoring systems.

Content Module 2. Technical and Organizational Preparation for Ship Survivability Management

Topic 1. Ensuring survivability of technical equipment and cargo. Maintaining operability of the main power plant, auxiliary systems, navigation equipment, and electrical power system during an emergency. Crew member duties in case of emergency, notification procedures, and organization of interaction during an accident.

Topic 2. Elimination of accident consequences. Crew actions for hull damage repair, restoration of life support systems, water removal, and localization of accident consequences at sea.

Topic 3. Crew training for ship survivability management. Types and methods of crew training for emergency actions, conducting drills, developing ship survivability management plans and schemes, maintaining documentation in accordance with SOLAS and ISM Code requirements.

Topic 4. Restoration of stability and buoyancy of a damaged ship. Methods of stability control, crew actions to restore stability and ship trim after damage. Methods of water pumping, ballasting, cargo redistribution.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

1. SOLAS Regulations in Marine Fire Investigations [Электронный ресурс] / Jensen Hughes, 2025. – Режим доступа: <https://www.jensenhughes.com/insights/solas-regulations-in-marine-fire-investigations>
2. 70 Key Firefighting Safety Q&A for Ship Safety Officers [Электронный ресурс] // Marine Public, 2024. – Режим доступа: <https://marinepublic.com/blogs/training/112708-key-firefighting-safety-q-a-for-ship-safety-officers>
3. Ship Fire Safety Standards: Prevention & Emergency Systems [Электронный ресурс] // Marine Public, 2024. – Режим доступа: <https://www.marinepublic.com/blogs/training/275719-ship-fire-safety-standards-prevention-emergency-systems>

4. International Safety Management Code Requirements [Электронный ресурс] / EduMaritime. – Режим доступа: <https://www.edumaritime.net/ism-code>
5. What is International Safety Management Code or ISM Code for Ships? [Электронный ресурс] / Marine Insight, 2024. – Режим доступа: <https://www.marineinsight.com/maritime-law/what-is-international-safety-management-code-or-ism-code-for-ships/>
6. Guidance on Procedures for operational controls [Электронный ресурс] / Paris MoU. – Режим доступа: <https://www.parismou.org/sites/default/files/Guidance%20on%20Procedures%20for%20operational%20controls.pdf>
7. MSIS 2: International Management Code for the safe operation of ships and for pollution prevention (The ISM Code) [Электронный ресурс] / Maritime and Coastguard Agency, UK, 2024. – Режим доступа: <https://www.gov.uk/government/publications/the-ism-code-msis-2/msis-2-international-management-code-for-the-safe-operation-of-ships-and-for-pollution-prevention-the-ism-code--2>
8. Stability of Ships and Other Bodies [Электронный ресурс] / Open Textbook Library, ver. 0.7.0. – Режим доступа: <https://open.umn.edu/opentextbooks/textbooks/1023>

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points	
Module 1					Module 2					Module 3 – Individual Assignment (IA)			
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 											Not provided by educational program and curriculum	40	100
For part-time form of education: <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 													

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from

assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Handbook of Damage Control [Электронный ресурс] / NAVPERS 16191. – Maritime.org, 1945. – Режим доступа: <https://maritime.org/doc/dc/index.php>
2. Barrass, C. B. Ship Stability for Masters and Mates [Текст] / C. B. Barrass, D. R. Derrett. – 7th ed. – Butterworth-Heinemann, 2012. – 464 p.
3. Chapter 4: Stability [Электронный ресурс] / U.S. Naval Academy, Naval Architecture and Ocean Engineering Department. – Режим доступа: https://www.usna.edu/NAOE/_files/documents/Courses/EN400/02.04%20Chapter%204.pdf
4. Damage Controlman Training Course [Электронный ресурс] / Maritime.org. – Режим доступа: <https://maritime.org/doc/pdf/damagecontrolman.pdf>
5. International Convention for the Safety of Life at Sea (SOLAS) [Электронный ресурс] / International Maritime Organization, 1974, as amended. – Режим доступа: <https://www.imo.org/en/ourwork/safety/pages/damagability.aspx>
6. International Safety Management (ISM) Code [Электронный ресурс] : International Management Code for the Safe Operation of Ships and for Pollution Prevention / IMO, 2015. – Режим доступа: <https://www.imo.org/en/ourwork/humanelement/pages/ismcode.aspx>
7. International Code for Fire Safety Systems (FSS Code) [Электронный ресурс] / IMO, 2015. – Режим доступа: <https://www.imo.org/en/ourwork/safety/pages/history-of-fire-protection-requirements.aspx>
8. SOLAS Convention Chapter II-2 – Fire Protection, Fire Detection and Fire Extinction [Электронный ресурс]. – Режим доступа: <https://www.marineinsight.com/marine-safety/a-brief-overview-of-fire-control-plan-on-ship/>

Supplementary Literature:

1. Jassal, R. 6 Resources That Will Get You Ready for Damage Stability [Электронный ресурс] / R. Jassal // MySeaTime, 2024. – Режим доступа: <https://www.myseatime.com/blog/detail/damage-stability-booklet>
2. Guidelines on the Application of the IMO International Safety Management (ISM) Code [Электронный ресурс] / International Chamber of Shipping. – 6th ed., 2024. – Режим доступа: <https://www.ics-shipping.org/publications/guidelines-on-the-application-of-the-imo-international-safety-management-ism-code-sixth-edition>
3. Gow, J. Firefighting at Sea – Towards a Safe Ship Concept [Электронный ресурс] / J. Gow // Marine Link, 2022. – Режим доступа: <https://www.marinelink.com/news/firefighting-sea-towards-a-safe-ship-500933>
4. Procedures: Steps for a proper fire drill under SOLAS [Электронный ресурс] // SAFETY4SEA, 2023. – Режим доступа: <https://safety4sea.com/cm-procedures-steps-for-a-proper-fire-drill-under-solas/>

Ship Power Plants and Auxiliary Equipment

National Transport
University

Ship Power Plants and Auxiliary Equipment

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Vyacheslav Tryshyn

Contact information Email: trv.argent@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component. The educational component “Ship Power Plants and Auxiliary Ship Equipment” ensures the development in future specialists of the maritime and inland waterway fleet of a comprehensive understanding of ship power plants and auxiliary ship equipment, as well as the formation of solid scientific knowledge in this field. The study of ship power plants and auxiliary ship equipment makes it possible to understand their purpose, operating principles, and their role in ensuring the safety of navigation. Familiarization with ship power plants and auxiliary ship equipment forms in students a holistic view of shipboard systems as an integrated technical complex. The course contributes to an awareness of the importance of ship power plants and auxiliary ship equipment for professional activity, the development of skills in analyzing their operating principles, and the application of operational experience of these systems in the practice of the modern fleet.

Subject of study of this educational component is the formation of core professional knowledge and skills that ensure enhanced safety of navigation and reliable technical operation of a vessel. In teaching this educational component, the following objectives are addressed: mastering by students the theoretical foundations of the discipline; learning the rules for the safe technical operation and maintenance of marine internal combustion engines, auxiliary machinery and electrical equipment, as well as shipboard electrical networks; understanding the requirements of the international conventions SOLAS, MARPOL, and STCW; and acquiring knowledge of occupational safety measures during maintenance and repair operations.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation

diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;

- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Marine Internal Combustion Engines, Ship Systems, and Auxiliary Machinery

Topic 1. Analysis of the operation of shipboard desalination plants; calculation of energy consumption and productivity in seawater desalination.

Topic 2. Control of marine internal combustion engines from the bridge in **Remote Automatic Control (RAC)** mode.

Topic 3. Ship auxiliary machinery: ballast systems and bilge (dewatering) systems.

Content Module 2. Ship Electrical Equipment

Topic 4. Main characteristics of ship electrical equipment, nameplate (rated) values, and requirements of classification societies.

Topic 5. Parallel operation of ship generators: electrical load sharing and power distribution.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Conventions, Codes and Guidelines on Ship Safety and Marine Engineering [Electronic resource]. – Available at: <https://www.imo.org>
2. International Association of Classification Societies (IACS) – Unified Requirements and Technical Standards for Ship Machinery and Electrical Systems [Electronic resource]. – Available at: <https://iacs.org.uk>
3. DNV – Maritime Technical Rules, Recommended Practices and Training Materials [Electronic resource]. – Available at: <https://www.dnv.com/maritime>
4. Lloyd’s Register – Rules and Regulations for the Classification of Ships and Marine Engineering Guidance [Electronic resource]. – Available at: <https://www.lr.org>

Educational Resources:

Online Courses (MOOCs):

1. American Bureau of Shipping (ABS) – Marine Engineering, Electrical and Automation Resources [Electronic resource]. – Available at: <https://ww2.eagle.org>
2. Wärtsilä – Marine Power Plants, Auxiliary Systems and Technical Training Materials [Electronic resource]. – Available at: <https://www.wartsila.com/marine>
3. MAN Energy Solutions – Two-stroke and Four-stroke Marine Engines, Auxiliary Systems Documentation [Electronic resource]. – Available at: <https://www.man-es.com/marine>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

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Reassessment Policy.

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Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

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If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Marine Auxiliary Machinery / H. D. McGeorge. – 8th ed. – Butterworth-Heinemann, 2012.
2. Introduction to Marine Engineering / D. A. Taylor. – 2nd ed. – Butterworth-Heinemann, 1996.
3. Marine Diesel Engines / A. C. Reithmaier. – Oxford : Butterworth-Heinemann, 2014.
4. Marine Engineering Practice / A. T. Rowen. – London : Butterworth-Heinemann, 2010.
5. Ship Power Plants / V. A. Zubrilin. – London : CRC Press, 2018.
6. Marine Electrical Equipment and Practice / H. D. McGeorge. – 5th ed. – Butterworth-Heinemann, 2011.
7. Electric Power Systems on Ships / R. R. Al-Ashkar. – London : IET, 2018.
8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
9. Practical Marine Engineering / Alan L. Rowen. – Elsevier, 2009.
10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

Supplementary Literature:

1. ABB – Marine Electrical Systems, Power Generation and Automation Resources [Electronic resource]. – Available at: <https://new.abb.com/marine>
2. Kongsberg Maritime – Ship Automation, Remote Control Systems and Integrated Power Solutions [Electronic resource]. – Available at: <https://www.kongsberg.com/maritime>
3. Marine Insight – Marine Engineering Articles, Tutorials and Technical Explanations [Electronic resource]. – Available at: <https://www.marineinsight.com>

Microprocessor Technology

National Transport
University

Microprocessor Technology

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Associate Professor of the Department Mykyta Hordieiev

Contact information Email: mgordyeyev@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Microprocessor Technology” ensures the formation in students of a holistic understanding of the principles of design and operation of modern microprocessor systems. Within the course, the architectures of microprocessors and microcontrollers are studied, including their main functional units, operating modes, instruction sets, and memory addressing methods. Significant attention is given to input/output organization, timers, interrupts, data communication interfaces, and interaction with peripheral devices. The discipline covers the fundamentals of microprocessor programming using both low-level and high-level languages, as well as methods for debugging and testing hardware–software solutions. Practical classes are aimed at developing skills in operating embedded systems, analyzing timing characteristics, and evaluating code functionality. Special focus is placed on issues of energy efficiency, reliability, and security of embedded systems, as well as current trends in the development of microprocessor technology and its fields of practical application. The course serves as a foundational subject for further study of electronics, automation, robotics, and industrial information technologies. It also contributes to an understanding of the importance of microprocessor technology for professional activity and to the development of skills in analyzing and operating shipboard digital equipment in the practice of the modern fleet.

Subject of study of the educational component “Microprocessor Technology” comprises the principles of design, operation, and application of microprocessors, microcontrollers, and microprocessor-based systems as part of embedded and control devices. Within this educational component, the architectures of microprocessor systems are examined, including memory organization, instruction sets, addressing modes, as well as hardware and software input/output facilities. The subject also covers methods of programming, debugging, and integrating microprocessors with peripheral modules, analysis of timing characteristics, and the specifics of the practical application of microprocessor technology in modern shipboard electronic and automated systems.

Interdisciplinary connections.

The educational component integrates knowledge from:

– Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators,

and basic optimization of operating modes;

- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Microprocessor Technology: Architecture, Organization, and Basic Operating Principles

Topic 1. Architecture of Microprocessors and Microcontrollers.

Structure of the central processing unit. Main functional units: arithmetic logic unit (ALU), registers, buses, and controllers. Classification of microprocessors. Comparison between microprocessors and microcontrollers.

Topic 2. Instruction Sets and Memory Addressing Modes.

Types of instructions: arithmetic, logical, and control instructions. Principles of memory addressing: direct, indirect, relative, and register addressing. Use of stacks and buffers.

Topic 3. Input/Output Organization.

Main I/O methods: programmed I/O, interrupt-driven I/O, and direct memory access (DMA). Interfaces and interaction with peripheral devices: sensors, displays, and communication modules.

Topic 4. Timers, Counters, and Interrupt Systems.

Principles of operation of timers and counters. Use of interrupts for event control. Examples of application in real control systems.

Content Module 2. Programming and Application of Microprocessor Systems: From Code to Practical Solutions

Topic 1. Microprocessor Programming.

Fundamentals of programming using low-level languages (assembly) and high-level languages (C, Python). Program structure and memory organization.

Topic 2. Debugging, Testing, and Optimization of Hardware–Software Solutions.

Methods of code debugging, device operation testing, error detection and elimination. Optimization of execution time and energy consumption.

Topic 3. Embedded Systems and Their Integration.

Structure of embedded systems. Application of microprocessors in industrial and consumer devices. Examples of integration of sensors and actuators.

Topic 4. Practical Applications of Microprocessor Technology.

Implementation of automated control systems, robotics, and the Internet of Things (IoT). Analysis of timing characteristics, system reliability, and security.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning

- Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
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5. Ship Power Plants / V. A. Zubrilin. – London : CRC Press, 2018.
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7. Electric Power Systems on Ships / R. R. Al-Ashkar. – London : IET, 2018.
8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
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Ship Repair and Technical Maintenance of Vessels

National Transport
University

Ship Repair and Technical Maintenance of Vessels

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Senior Lecturer Valerii Shtrybets

Contact information Email: ngineerlogic@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Ship Repair and Technical Maintenance of Vessels” ensures the development in future specialists of the maritime and inland waterway fleet of a comprehensive understanding of the operating processes of ship power plants and auxiliary equipment, as well as methods for troubleshooting malfunctions and ensuring proper technical operation of shipboard equipment.

Subject of study of this educational component includes defect detection, disassembly, repair, and reassembly of ship technical equipment, as well as the acquisition of practical experience in solving applied tasks aimed at maintaining the proper condition of a vessel throughout its planned service life. The main objectives of the educational component are: studying the technological process of ship repair and the repair of its structural and functional elements; analyzing possible defects of ship technical equipment, the causes of their occurrence, and methods of their detection; designing technological processes for restoring the dimensions, shapes, and properties of parts; studying the types and programs of testing of vessels and their components; and analyzing repair and maintenance documentation.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and

safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Introduction. Theoretical Fundamentals of Ship Repair and Vessel Operation

Topic 1. Concept of Technical Operation of Ship Equipment

Definition of technical operation of vessels, as well as the scope and objectives of technical operation.

Topic 2. Technical Maintenance and Repair

Production processes in maritime and inland waterway transport. Technical operation, maintenance, and repair of vessels and ship technical equipment as an integrated industrial system.

Topic 3. Management of Technical Operation

Methods of managing technical operation and repair on board ships and at industrial facilities.

Topic 4. Organization of the Management Process

Systems for organizing the management process of technical operation and repair of vessels and ship technical equipment.

Content Module 2. Organization of Technical Operation on Board Ships

Topic 5. Repair Planning

Methods of ship repair in various scenarios. Types of ship repairs, their characteristics, and methods of application. Technical maintenance as a means of keeping vessels in operational condition and reducing repair costs at ship repair enterprises. Types and methods of technical maintenance.

Topic 6. Organization of Technical Operation on Board Ships

Basic planning principles: autonomy, directive nature, complexity, and continuity. Planning of technical operation on board ships and the documentation maintained on board related to technical operation.

Topic 7. Types and Organization of Ship Surveys

Types and categories of classification surveys of vessels. Ship documents issued by classification societies upon commissioning, after repair, following accidents, and in cases of withdrawal of documents for various reasons.

Topic 8. Technical Maintenance of Diesel Engines and Turbo Units

Types of technical maintenance of marine diesel engines. Types of ship and design documentation used for diesel maintenance. Diagnostic methods, entries in engine room logbooks and forms. Types and intervals of diesel maintenance.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Conventions, Codes and Guidelines on Ship Safety and Marine Engineering [Electronic resource]. – Available at: <https://www.imo.org>
2. International Association of Classification Societies (IACS) – Unified Requirements and Technical Standards for Ship Machinery and Electrical Systems [Electronic resource]. – Available at: <https://iacs.org.uk>
3. DNV – Maritime Technical Rules, Recommended Practices and Training Materials [Electronic resource]. – Available at: <https://www.dnv.com/maritime>

4. Lloyd's Register – Rules and Regulations for the Classification of Ships and Marine Engineering Guidance [Electronic resource]. – Available at: <https://www.lr.org>

Educational Resources:

Online Courses (MOOCs):

1. American Bureau of Shipping (ABS) – Marine Engineering, Electrical and Automation Resources [Electronic resource]. – Available at: <https://ww2.eagle.org>
2. Wärtsilä – Marine Power Plants, Auxiliary Systems and Technical Training Materials [Electronic resource]. – Available at: <https://www.wartsila.com/marine>
3. MAN Energy Solutions – Two-stroke and Four-stroke Marine Engines, Auxiliary Systems Documentation [Electronic resource]. – Available at: <https://www.man-es.com/marine>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Marine Auxiliary Machinery / H. D. McGeorge. – 8th ed. – Butterworth-Heinemann, 2012.
2. Introduction to Marine Engineering / D. A. Taylor. – 2nd ed. – Butterworth-Heinemann, 1996.
3. Marine Diesel Engines / A. C. Reithmaier. – Oxford : Butterworth-Heinemann, 2014.
4. Marine Engineering Practice / A. T. Rowen. – London : Butterworth-Heinemann, 2010.
5. Ship Power Plants / V. A. Zubrilin. – London : CRC Press, 2018.
6. Marine Electrical Equipment and Practice / H. D. McGeorge. – 5th ed. – Butterworth-Heinemann, 2011.
7. Electric Power Systems on Ships / R. R. Al-Ashkar. – London : IET, 2018.

8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
9. Practical Marine Engineering / Alan L. Rowen. – Elsevier, 2009.
10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

Supplementary Literature:

1. ABB – Marine Electrical Systems, Power Generation and Automation Resources [Electronic resource]. – Available at: <https://new.abb.com/marine>
2. Kongsberg Maritime – Ship Automation, Remote Control Systems and Integrated Power Solutions [Electronic resource]. – Available at: <https://www.kongsberg.com/maritime>
3. Marine Insight – Marine Engineering Articles, Tutorials and Technical Explanations [Electronic resource]. – Available at: <https://www.marineinsight.com>

Shipboard Computers and Computer Networks

National Transport
University

Shipboard Computers and Computer Networks

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Vyacheslav Tryshyn

Contact information Email: trv.argent@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component The educational component “Shipboard Computers and Computer Networks” ensures the development of future specialists in maritime and inland water transport by providing them with the knowledge and skills required to operate shipboard computer systems and equipment. Learners gain the opportunity to master basic operating systems and become familiar with the software used in shipboard computer equipment and systems.

Subject of study of the educational component covers personal computers, including their architecture, classification, and hardware components. The course also addresses operating systems, multimedia content processing, data archiving, computer input/output and control devices, data handling and file formats, as well as the global Internet network and web technologies.

Interdisciplinary connections.

The educational component integrates knowledge from:

- **technical sciences:** computer science, computer engineering, automation, and telecommunications – for understanding the hardware and software foundations of networks;
- **navigation and engineering disciplines:** shipboard automated control systems, navigation information systems, and ship communication systems – for the practical application of network technologies in the maritime sector;
- **management sciences:** logistics, management, and transport process management – to ensure information support for managerial decision-making;
- **information security and maritime law** – to ensure compliance with safety requirements, data protection, and international standards in the field of maritime transport.

The educational component program consists of the following modules:

Content Module 1. Shipboard Computer Systems and Software

Topic 1. Introduction to the Course.

The role of shipboard computers in modern maritime and inland waterway fleets.

Classification of shipboard information systems.

The role of computer technologies in ensuring navigational safety.

Topic 2. Hardware Architecture of Shipboard Computers.

Processors, memory, and data storage devices.

Peripheral devices.

Requirements for reliability, vibration resistance, and moisture protection of shipboard equipment.

Topic 3. Operating Systems of Shipboard Computers.

General principles of operating system functionality.

Real-Time Operating Systems (RTOS).

Embedded operating systems.

Specific features of using Windows and Linux in shipboard environments.

Topic 4. Shipboard Application Software.

Navigation and information software (ECDIS, AIS, GPS).

Monitoring and control systems for ship machinery.

Integrated Bridge Systems (IBS, INS).

Content Module 2. Shipboard Computer Networks and Information Security

Topic 5. Fundamentals of Computer Networks.

Types of networks, topologies, network models, and protocols.

Specific features of designing local area networks on board ships.

Topic 6. Shipboard Network Technologies and Interfaces.

Internet, CAN, NMEA 0183/2000, Modbus, Profibus.

Integration of navigation, radio-technical, and automated systems.

Topic 7. Access to Global Networks and Data Transmission on Board Ships.

Satellite communication systems.

Shipboard information and communication systems.

Data exchange between ship and shore.

Topic 8. Cybersecurity of Shipboard Computer Systems and Networks.

Main threats and vulnerabilities.

Information protection and data backup.

International IMO requirements and recommendations on ship cybersecurity.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. Cisco Networking Academy – Computer Networking & Network Administration Resources [Electronic resource]. – Available at: <https://www.netacad.com>
- Internet Engineering Task Force (IETF) – RFCs: Internet Standards and Protocols [Electronic resource]. – Available at: <https://www.ietf.org/standards/rfcs/>
2. Internet Society – Networking and Internet Infrastructure Resources [Electronic resource]. – Available at: <https://www.internetsociety.org>
3. National Institute of Standards and Technology (NIST) – Computer Security & Network Management [Electronic resource]. – Available at: <https://www.nist.gov/cyberframework>
4. Microsoft Learn – Windows Server & Network Administration [Electronic resource]. – Available at: <https://learn.microsoft.com>

5. Red Hat – Linux Networking and System Administration [Electronic resource]. – Available at: <https://www.redhat.com/en/services/training>
6. CompTIA – Network+ and Security+ Resources [Electronic resource]. – Available at: <https://www.comptia.org>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: Computer Networking [Electronic resource] / Google. – Available at: <https://www.coursera.org/learn/computer-networking>
2. Coursera: Networking Basics [Electronic resource] / Cisco. – Available at: <https://www.coursera.org/learn/networking-basics>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
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Recommended literature

Basic Literature:

1. Computer Networking: A Top-Down Approach / J. F. Kurose, K. W. Ross. – 8th ed. – Pearson, 2021.
2. Data Communications and Networking / B. A. Forouzan. – 5th ed. – McGraw-Hill, 2017.
3. Computer Networks / A. S. Tanenbaum, D. J. Wetherall. – 5th ed. – Pearson, 2011.
4. Network Administration / T. Lammler. – Sybex, 2020.
5. TCP/IP Illustrated, Volume 1 / W. R. Stevens, K. R. Fall. – 2nd ed. – Addison-Wesley, 2011.

Supplementary Literature:

1. Internet Engineering Task Force (IETF) – RFC Series: Internet Protocol Standards Available at: <https://www.ietf.org/standards/rfcs/>
2. Cisco Networking Academy – Networking and Network Administration Materials Available at: <https://www.netacad.com>

Shipboard Automated Electric Power Plants and Control Systems

National Transport
University

Shipboard Automated Electric Power Plants and Control Systems

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Oleksandr Kyrychenko, PhD in Engineering, Associate Professor

Contact information Email: askyrychenko@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Shipboard Automated Electric Power Plants and Control Systems” is aimed at developing systematic knowledge among higher education students regarding modern shipboard electric power plants and automated control and monitoring systems. The course provides an understanding of the principles of design, operation, and maintenance of shipboard electrical power sources, distribution networks, automatic regulation systems, protection systems, and monitoring tools. During the study of the discipline, students become familiar with the architecture of automated shipboard electric power systems, control algorithms for generator operating modes, parallel operation of power plants, as well as automatic start-up, shutdown, and equipment protection systems. Particular attention is paid to issues of reliability, energy efficiency, operational safety, and compliance with international maritime requirements and standards. The study of this educational component contributes to the development of professional competencies necessary for analyzing the technical condition of shipboard electric power plants, making well-founded decisions during the operation and maintenance of automated control systems, and ensuring continuous and safe ship operation under various navigation modes. The acquired knowledge and skills are essential for the further professional activity of specialists in maritime and inland water transport under the conditions of a modern automated fleet.

Subject of study of the educational component is the set of technical means, design principles, and operating principles of shipboard automated electric power plants and control systems, including shipboard power stations, electrical networks, automatic regulation, control, protection, and alarm systems, as well as methods for their safe, reliable, and energy-efficient operation in accordance with international maritime regulations and standards.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;

- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Introduction. Fundamentals of Engineering Mechanics

Topic 1. Mechanisms for Transmitting Rotary Motion

Definition of the concept of gear (transmission) ratio. Application of friction drives, belt drives, chain drives, gear drives, and worm drives.

Topic 2. Mechanisms for Motion Conversion

Screw mechanisms. Crank-and-connecting-rod mechanisms. Eccentric mechanisms. Slotted-link (linkage) mechanisms. Cam mechanisms. Basic concepts of **axles and shafts**.

Topic 3. Fixed Detachable Joints

Threaded joints: concept and purpose. Definitions of the terms **stud**, **nut**, and **bolt**. Keyed joints and their purpose. Types of keys.

Topic 4. Assembly of Rotating Joints and Mechanisms

Guides for rotary motion. Concept of a cylindrical support. Processes of assembling shafts and axles and installing them in bearings.

Content Module 2. Fundamentals of Automatic Control

Topic 5. Fundamentals of Automatic Systems

Parameters characterizing the operation of ship power plants (SPP) continuously change; therefore, the essence of automatic control lies in maintaining these parameters within permissible and safe limits. Basic elements of automatic control systems.

Topic 6. Adjustment and Testing of Shipboard Equipment

Consideration of interchangeability during the design of automation devices. Mandatory consideration of fitting and alignment methods during the installation of parts and assemblies of mechanisms. Concept of testing, its purpose and objectives. Types of tests.

Topic 7. Assembly Process of Measuring Mechanisms

Measuring technology as the main unit of indicating electrical measuring instruments. Requirements for the assembly of measuring instruments.

Topic 8. Occupational Safety in the Maintenance of Electromechanical Devices and Systems

Prevention of occupational injuries, electric shock hazards, and the occurrence of dangerous аварій leading to the destruction of costly mechanisms. List of premises with increased hazard levels.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
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Learning resources

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Educational Resources:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
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6. Marine Electrical Equipment and Practice / H. D. McGeorge. – 5th ed. – Butterworth-Heinemann, 2011.
7. Electric Power Systems on Ships / R. R. Al-Ashkar. – London : IET, 2018.
8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
9. Practical Marine Engineering / Alan L. Rowen. – Elsevier, 2009.
10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

Supplementary Literature:

1. ABB – Marine Electrical Systems, Power Generation and Automation Resources [Electronic resource]. – Available at: <https://new.abb.com/marine>
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3. Marine Insight – Marine Engineering Articles, Tutorials and Technical Explanations [Electronic resource]. – Available at: <https://www.marineinsight.com>

Theory of Heat Engines

National Transport
University

Theory of Heat Engines

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted
Candidate of Technical Sciences, Senior Lecturer Valerii Shtrybets

Contact information Email: engineerlogic@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Theory of Heat Engines” is aimed at developing fundamental knowledge among higher education students regarding the physical principles of converting thermal energy into mechanical work and the laws governing the operation of heat engines. The course provides an understanding of thermodynamic processes and cycles that underlie the operation of heat engines, as well as the principles of their efficiency and energy feasibility. During the study of the discipline, the basic provisions of engineering thermodynamics, working cycles of heat engines, fuel combustion processes, heat balances, and performance efficiency indicators are examined. Particular attention is paid to the analysis of ideal and real cycles, energy losses, as well as the influence of design and operational factors on the performance of heat engines. The study of this educational component contributes to the development of students’ ability to analyze and evaluate the operation of heat engines and to apply theoretical knowledge to solving engineering problems related to the operation, modernization, and improvement of the energy efficiency of power plants. The acquired knowledge forms a fundamental basis for the further study of specialized technical and energy-related disciplines.

Subject of study of the educational component is the theory of working processes, design, methods of engineering design, manufacturing, repair, and operation of heat engines.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;

- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Thermal Power Engineering

Topic 1. Operating Principle and Classification of Heat Engines (Internal and External Combustion)

Heat engine cycles. Specific features of diesel engines: internal mixture formation. Engines are classified according to the following criteria:

- by the method of implementing the working cycle;
- by the mode of operation;
- by the method of cylinder charging.

Topic 2. Working Processes of Internal Combustion Engines (ICE)

Gas exchange, compression, combustion, and expansion processes. Analysis of working processes in four-stroke and two-stroke internal combustion engines. Definition of a stroke and the main parameters of internal combustion engines.

Topic 3. Theoretical Cycles

Comparative analysis of cycles of internal combustion engines and gas turbine plants. Comparison of the efficiency (thermal efficiency) of internal combustion engines and gas turbine plants, as well as features of operation, maintenance, and repair.

Topic 4. Theory of Supercharging and Mixture Formation

Methods for increasing power output and fuel efficiency. Main causes of power reduction and methods for improving engine performance parameters.

Content Module 2. Heat Engines

Topic 5. Gas Turbine and Steam Turbine Plants

Parameters of gas turbine and steam turbine plants, materials used, and operational features. Advantages and disadvantages. Service life and specific features of maintenance and repair.

Topic 6. Heat Balance and Thermal Stress of Engines

Distribution of heat released during fuel combustion. Thermal stress as a key factor affecting engine reliability. Temperature differences between the cylinder liner and the piston, non-uniform engine heating, and their impact on the durability of heat engines.

Topic 7. Engine Performance Characteristics and Operating Modes

Energy, economic, and operational indicators used to assess engine operating modes. These indicators provide a comprehensive understanding of the feasibility of using a particular engine and its economic efficiency, especially under conditions of fuel economy and environmental protection.

Topic 8. Environmental Aspects

Impact of heat engines on the environment and exhaust emission toxicity. Methods for reducing negative environmental impacts. Operational and maintenance culture of heat engines. Fuel standards and requirements of countries through whose territories vessels operate.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Conventions, Codes and Guidelines on Ship Safety and Marine Engineering [Electronic resource]. – Available at: <https://www.imo.org>
2. International Association of Classification Societies (IACS) – Unified Requirements and Technical Standards for Ship Machinery and Electrical Systems [Electronic resource]. – Available at: <https://iacs.org.uk>
3. DNV – Maritime Technical Rules, Recommended Practices and Training Materials [Electronic resource]. – Available at: <https://www.dnv.com/maritime>
4. Lloyd’s Register – Rules and Regulations for the Classification of Ships and Marine Engineering Guidance [Electronic resource]. – Available at: <https://www.lr.org>

Educational Resources:

Online Courses (MOOCs):

1. American Bureau of Shipping (ABS) – Marine Engineering, Electrical and Automation Resources [Electronic resource]. – Available at: <https://ww2.eagle.org>
2. Wärtsilä – Marine Power Plants, Auxiliary Systems and Technical Training Materials [Electronic resource]. – Available at: <https://www.wartsila.com/marine>
3. MAN Energy Solutions – Two-stroke and Four-stroke Marine Engines, Auxiliary Systems Documentation [Electronic resource]. – Available at: <https://www.man-es.com/marine>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from

assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Marine Auxiliary Machinery / H. D. McGeorge. – 8th ed. – Butterworth-Heinemann, 2012.
2. Introduction to Marine Engineering / D. A. Taylor. – 2nd ed. – Butterworth-Heinemann, 1996.
3. Marine Diesel Engines / A. C. Reithmaier. – Oxford : Butterworth-Heinemann, 2014.
4. Marine Engineering Practice / A. T. Rowen. – London : Butterworth-Heinemann, 2010.
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10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

Supplementary Literature:

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Marine Engineering

National Transport
University

Marine Engineering

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Doctor of Philosophy (PhD) in Specialty 271 “River and Maritime Transport”, Senior Lecturer Anton Shevchenko

Contact information Email: shevchenko_ap@gsuite.duit.edu.ua

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Marine Engineering” is aimed at developing students’ fundamental knowledge and practical skills in the design, operation, and maintenance of marine vessels and marine engineering equipment. The course covers the basics of shipbuilding, hydrodynamics, materials science, propulsion plants, and ship control systems. Particular emphasis is placed on the safety, reliability, and efficiency of marine engineering systems. Laboratory and practical classes provide hands-on experience in modeling, diagnostics, and technical maintenance of ship machinery and equipment. The discipline is fundamental to the training of maritime professionals and integrates knowledge from engineering, physical, and technological sciences to ensure the effective operation of marine assets. The course fosters an understanding of the significance of marine engineering for professional practice and supports the development of analytical and operational skills related to shipboard equipment in the context of the modern fleet.

Subject of study of this educational component encompasses the main stages in the development of knowledge in marine engineering from ancient times to the present day. The course examines the key periods in the evolution of marine engineering, as well as the engineering principles, methods, and technical solutions applied in the design, construction, operation, and maintenance of marine vessels, floating structures, and maritime infrastructure. Within the discipline, students study ship hull structures, marine propulsion and power plants, auxiliary machinery and systems, as well as hydrodynamic processes affecting ship motion and stability. The subject also addresses issues related to material selection and the assurance of strength, reliability, and durability of marine assets. Particular attention is given to safety requirements, environmental aspects of maritime activities, and the application of modern engineering technologies in the marine industry.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as

applied to ship power plants and auxiliary systems;

- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Marine Engineering: Formation, Engineering Principles, and Structural Features of Marine Assets

Topic 1. Emergence and Development of Marine Engineering

Prerequisites for the formation of marine engineering as a field of technical knowledge. Historical stages in the development of shipbuilding and marine engineering structures. The impact of scientific and technological progress on the advancement of marine technology.

Topic 2. Ship Hull Structure and Strength

Main types of marine vessel hulls. Structural elements of the hull. Shipbuilding materials. Loads, strength, stability, and unsinkability of ships.

Topic 3. Hydrodynamics and Marine Operating Conditions

Ship motion in water. Resistance to motion and maneuverability. Influence of waves, currents, and wind on ship operation. Fundamentals of marine hydrodynamics.

Topic 4. Marine Power Plants and Auxiliary Systems

Types of ship power plants. Diesel, gas turbine, and electric propulsion systems. Auxiliary machinery and ship life-support systems.

Content Module 2. Modern Marine Engineering: Operation, Safety, and Innovative Technologies

Topic 1. Operation and Maintenance of Marine Vessels

Organization of technical operation. Scheduled maintenance and repair of ships. Diagnostics of the technical condition of ship systems.

Topic 2. Safety and Reliability of Marine Engineering Systems

Fundamentals of navigation safety. Reliability and survivability of ships. Emergency situations and technical means of their prevention.

Topic 3. Marine Engineering Structures and Infrastructure

Ports, terminals, and hydraulic structures. Floating platforms and offshore facilities. Design and operational features.

Topic 4. Innovations and Prospects for the Development of Marine Engineering

Digital technologies in shipbuilding. Automation and “smart” ships. Environmentally friendly and energy-efficient solutions. Prospects for the development of the maritime industry in the context of globalization.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

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Late Submission Policy.

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- Cheating
- Deception
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- Bribery

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Classroom Behavior.

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3. Marine Diesel Engines / A. C. Reithmaier. – Oxford : Butterworth-Heinemann, 2014.
4. Marine Engineering Practice / A. T. Rowen. – London : Butterworth-Heinemann, 2010.
5. Ship Power Plants / V. A. Zubrilin. – London : CRC Press, 2018.
6. Marine Electrical Equipment and Practice / H. D. McGeorge. – 5th ed. – Butterworth-Heinemann, 2011.
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8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
9. Practical Marine Engineering / Alan L. Rowen. – Elsevier, 2009.
10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

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3. Marine Insight – Marine Engineering Articles, Tutorials and Technical Explanations [Electronic resource]. – Available at: <https://www.marineinsight.com>

Technical Systems of Navigation and Radiocommunication

National Transport
University

Technical Systems of Navigation and Radiocommunication

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Senior Lecturer
Iryna Trofymenko

Contact information Email: trofimenkokdvt70@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Technical Systems of Navigation and Radiocommunication” is aimed at developing students’ comprehensive knowledge of the structure, operating principles, and practical application of modern navigational and radio-technical systems used on marine vessels. Within the discipline, students study shipborne navigational instruments, radar systems, global navigation satellite systems (GNSS), automatic identification systems (AIS), and electronic chart display and information systems (ECDIS). Considerable attention is devoted to maritime radiocommunication systems, including the Global Maritime Distress and Safety System (GMDSS), rules for the operation of radio equipment, and international maritime safety standards. The course also covers the integration of navigational and radiocommunication systems, as well as their technical maintenance and diagnostics. Practical training focuses on developing skills in operating shipboard equipment under real operating conditions, ensuring reliable communications, navigation safety, and efficient ship handling in compliance with the requirements of international conventions.

Subject of study of the educational component “Technical Systems of Navigation and Radiocommunication” comprises the technical means, methods, and principles for ensuring navigation, ship control, and maritime radiocommunication. Within the discipline, the structure and operation of shipborne navigational instruments, radionavigation and radar systems, satellite navigation complexes, and automatic identification systems are examined. The subject also covers maritime radiocommunication systems, including GMDSS equipment, the rules governing their operation and maintenance, as well as their interaction with other shipboard systems. Particular attention is paid to the integration of navigational and radio-technical systems, ensuring the safety of navigation, and compliance with international regulations and standards.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;

- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Technical Systems of Ship Navigation: Purpose, Structure, and Operating Principles

Topic 1. Shipborne Navigational Instruments and Position-Fixing Means
Compass systems. Magnetic and gyrocompasses. Logs, echo sounders, and lead lines. Principles of measuring course, speed, and depth. Errors of navigational instruments and methods for their correction.

Topic 2. Radionavigation and Radar Systems of Ships
Principles of radionavigation. Shipborne radar systems. Display of the navigational situation. Determination of ranges and bearings. Application of radar for collision avoidance.

Topic 3. Satellite Navigation Systems and Electronic Charting Complexes
GNSS (GPS, GLONASS, Galileo). Operating principles. Electronic navigational charts. ECDIS. Integration of satellite data into shipboard systems.

Topic 4. Integrated Navigation Systems and Automated Ship Handling Aids
Integrated bridge systems. Autopilots. Decision support systems. Interaction of navigational instruments.

Content Module 2. Shipboard Radiocommunication and Maritime Safety Systems

Topic 1. Fundamentals of Maritime Radiocommunication
Physical principles of radio wave propagation. Frequency bands. Types and modes of maritime radiocommunication. Shipborne radio stations.

Topic 2. Global Maritime Distress and Safety System (GMDSS)
Purpose and structure of GMDSS. Shipborne equipment. Communication channels. Procedures for transmitting distress, urgency, and navigational safety messages.

Topic 3. Operation and Maintenance of Shipboard Radiotechnical Systems
Rules for the operation of radio equipment. Technical condition monitoring. Typical malfunctions and methods of their устранения. Personnel requirements.

Topic 4. International Standards and Regulatory Requirements in Ship Navigation and Radiocommunication
International conventions and rules. IMO regulations. SOLAS requirements. Ensuring the safety of navigation through navigation and communication systems.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Conventions, Codes and Guidelines on Ship Safety and Marine Engineering [Electronic resource]. – Available at: <https://www.imo.org>
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Educational Resources:

Online Courses (MOOCs):

1. American Bureau of Shipping (ABS) – Marine Engineering, Electrical and Automation Resources [Electronic resource]. – Available at: <https://ww2.eagle.org>
2. Wärtsilä – Marine Power Plants, Auxiliary Systems and Technical Training Materials [Electronic resource]. – Available at: <https://www.wartsila.com/marine>
3. MAN Energy Solutions – Two-stroke and Four-stroke Marine Engines, Auxiliary Systems Documentation [Electronic resource]. – Available at: <https://www.man-es.com/marine>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

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Fundamentals of Electrical and Radio Engineering and Electronics

National Transport
University

Fundamentals of Electrical and Radio Engineering and Electronics

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Candidate of Technical Sciences, Associate Professor of the Department Mykyta Hordieiev

Contact information Email: mgordyeyev@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The educational component “Fundamentals of Electrical Engineering, Radio Engineering, and Electronics” is aimed at developing basic theoretical knowledge and practical skills in the field of electrical, radio-engineering, and electronic systems used in modern technical and shipboard complexes. Within the discipline, the fundamental laws of electrical engineering, principles of designing direct current (DC) and alternating current (AC) electrical circuits, as well as the basics of radio-engineering processes and electronic components are studied. Considerable attention is paid to the analysis of semiconductor devices, electronic circuits, and signal transmission and processing systems. Study of this educational component provides a foundation for mastering specialized technical disciplines, fostering engineering thinking, and developing the ability to apply the acquired knowledge in the operation, maintenance, and diagnostics of shipboard technical systems.

Subject of study of the educational component “Fundamentals of Electrical Engineering, Radio Engineering, and Electronics” comprises the electrical, radio-engineering, and electronic processes, phenomena, and systems that underlie the operation of modern technical devices and complexes. The educational component covers the laws of direct current (DC) and alternating current (AC) electrical circuits, methods for their analysis and calculation, as well as the principles of generation, transmission, and reception of electromagnetic signals. The topics of study include electronic components and semiconductor devices, analog and digital electronic circuits, as well as basic radio-engineering systems. Particular attention is paid to the practical application of theoretical concepts in the operation, monitoring, and maintenance of technical equipment on river and sea vessels.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of

ship machinery;

- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Electrical Engineering and Circuit Theory

Topic 1. Basic Electrical Quantities and Laws of Electrical Engineering

Electric charge and electric field. Electric current, voltage, and resistance. Ohm's law for a section of a circuit and for a complete circuit. Kirchhoff's laws. Classification of electrical circuits.

Topic 2. Direct Current (DC) Electrical Circuits

Passive elements of electrical circuits. Series, parallel, and combined connections of elements. Operating modes of power sources. Power balance.

Topic 3. Alternating Current (AC) Electrical Circuits

Sinusoidal current and voltage. Resistive, inductive, and capacitive impedances. Phasor diagrams. Power in AC circuits.

Topic 4. Magnetic Circuits and Electromagnetic Phenomena

Magnetic field and magnetic flux. Electromagnetic induction. Mutual induction. Operating principle of transformers.

Content Module 2. Fundamentals of Radio Engineering and Electronics

Topic 1. Semiconductor Materials and Electronic Devices

Properties of semiconductors. p–n junction. Semiconductor diodes and their characteristics. Bipolar and field-effect transistors.

Topic 2. Fundamentals of Analog Electronics

Electrical signal amplifiers. Amplifier stages. Harmonic oscillators. Electrical signal filters.

Topic 3. Fundamentals of Digital Electronics

Logic gates and logic functions. Combinational and sequential digital circuits. Analog-to-digital and digital-to-analog converters.

Topic 4. Fundamentals of Radio Engineering and Radiocommunication

Electromagnetic oscillations and waves. Signal modulation and demodulation. Transmission and reception of radio signals. General principles of radio-engineering system design.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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Educational Resources:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

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Electric Propulsion Plants

National Transport
University

Electric Propulsion Plants

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Oleksandr Kyrychenko, PhD in Engineering, Associate Professor

Contact information Email: askyrychenko@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. Electric propulsion systems (EPS) provide the highest level of maneuverability and flexibility in ship motion control, which is critically important for specialized fleets. Modern electric propulsion systems are based on complex energy conversion systems and digital control technologies, requiring highly qualified personnel. The economic aspect of operating such systems is associated with optimizing propulsion modes and the use of power take-off and power management systems. Ensuring the reliability and survivability of electric propulsion systems has a direct impact on navigation safety, making issues of failure-free operation and rapid restoration of the operational capability of main propulsion drives a top priority.

Subject of study of this educational component comprises the principles of design, automatic control schemes, and operating modes of electric ship propulsion systems, as well as the training of specialists for the operation of complex propulsion complexes capable of addressing tasks related to the optimization of propulsion performance and ensuring the maximum efficiency of propeller electric motors.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
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- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and

safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Electric Propulsion Systems of Direct Current, Alternating Current, and Dual Current Type

Topic 1. Key Characteristics and Requirements for Electric Propulsion Systems

Specific features of electric propulsion systems. Advantages and disadvantages of electric propulsion. Classification of electric propulsion systems. Reliability and survivability of electric propulsion plants. Ship propulsion devices. Propellers. Prime movers of electric propulsion systems. Main generators and propulsion electric motors.

Topic 2. Direct Current (DC) Electric Propulsion Systems

Features of DC electric propulsion systems. Types of DC electric propulsion systems. Propulsion electric motors for DC systems. Main generators. Excitation systems. Steady-state and transient operating modes of DC propulsion systems. Main switchboards of DC electric propulsion systems. Protection systems. Interlocking and alarm systems. Control panels of the main switchboard.

Topic 3. Alternating Current (AC) Electric Propulsion Systems

Features of AC electric propulsion systems. Types and connection schemes of AC systems. Propulsion electric motors of AC propulsion systems. Speed control of AC electric motors. Main generators. Excitation systems. Synchronization of main generators. Steady-state and transient operating modes of AC propulsion systems. Starting and reversing of the main propulsion motor. Main switchboards of AC electric propulsion systems. Protection systems. Interlocking and alarm systems. Control panels of the main switchboard.

Topic 4. Electric Propulsion Systems with Valve and Semiconductor Converters

Features of electric propulsion systems with valve converters. Features of electric propulsion systems with semiconductor converters. Controlled valve converters. Uncontrolled valve converters. Synchronous generators with valve converters. Propulsion electric motor in a system with a valve converter. Starting and braking of the propulsion motor in systems with valve converters. Thyristor excitation systems for generators. Semiconductor AC frequency converters. Starting and braking of the propulsion motor in systems with semiconductor frequency converters.

Content Module 2. Automatic Control and Technical Operation of Electric Propulsion Systems

Topic 5. Automatic Control of Dual-Current Electric Propulsion Systems and Systems with Semiconductor Frequency Converters

Scope and level of automation. Structural control schemes of electric propulsion systems. Automatic control of propulsion systems with uncontrolled valve converters. Automatic control of propulsion systems with semiconductor frequency converters. Design features of control systems.

Topic 6. Microprocessor-Based and Digital-to-Analog Automatic Control Systems for Electric Propulsion Systems

Digital-to-analog automatic control systems for electric propulsion plants. Digital microprocessor-based automatic control systems for electric propulsion plants. Microprocessors and minicomputers.

Topic 7. Dynamic Characteristics and Optimization of Operating Modes of Electric Propulsion Systems

Objectives of optimal control of electric propulsion systems. Optimization of control strategies for electric propulsion systems. Subordinate control loops of electric propulsion systems. Optimization of ship idle-running modes.

Topic 8. Technical Operation of Electric Propulsion Systems

Testing of electric propulsion systems. Operation of electric propulsion systems. Operation of automation systems. Analysis of failures and malfunctions of DC electric propulsion systems. Analysis of failures and malfunctions of AC electric propulsion systems.

Assessment methods

– Test control

- Written control works
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Electronics and Electronic Control Systems

National Transport
University

Electronics and Electronic Control Systems

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Vyacheslav Tryshyn

Contact information Email: trv.argent@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component Electronics serves as the “brain” of modern ship control systems, providing data acquisition, information processing, and the generation of control actions. The rapid development of the semiconductor base and microprocessor technology requires specialists to possess a deep understanding of the operation of both discrete components and complex digital architectures. The reliability of electronic control systems is a key factor ensuring the stable operation of ship automation. The course addresses issues related to the diagnostics of electronic units, their resistance to external influences, and their integration into integrated shipwide monitoring and control systems.

Subject of study of this educational component includes the component base of semiconductor electronics, the principles of designing analog and digital devices, as well as the architecture of microprocessor controllers. The course is aimed at training specialists for the operation and maintenance of complex electronic units that provide automated control of shipboard technical systems.

Interdisciplinary connections.

The educational component integrates knowledge from:

- **technical sciences:** computer science, computer engineering, automation, and telecommunications – for understanding the hardware and software foundations of networks;
- **navigation and engineering disciplines:** shipboard automated control systems, navigation information systems, and ship communication systems – for the practical application of network technologies in the maritime sector;
- **management sciences:** logistics, management, and transport process management – to ensure information support for managerial decision-making;
- **information security and maritime law** – to ensure compliance with safety requirements, data protection, and international standards in the field of maritime transport.

The educational component program consists of the following modules:

Content Module 1. Electronic Component Base

Topic 1. Electrical Conductors, Semiconductors, and Dielectrics

Metal conductors and electrolytes. Solid-core and stranded wires. Internal resistance of metals. Metals with increased resistivity. Wire marking and diameter. Contact lamellae and spring contacts, contact pads. Connectors and battery compartments. Switches, selectors, toggle switches, tactile buttons. Installation of wires and cable harnesses. Purpose of insulators. Types and kinds of insulators. Electromechanical properties of insulators. Chemical properties of insulators. Semiconductor materials and their properties. N-type conductivity. P-type conductivity. P–N junction. P–N–P and N–P–N junctions. Application of semiconductors in electronics.

Topic 2. Active and Passive Discrete Components of Electronic Equipment

Rectifier diodes and valves. Pulse diodes. Thyristors and triacs. Zener diodes and stabilizers. Varactors. Permissible operating parameters of transistors. Marking and characteristics of diodes. Diode current–voltage characteristics. Types of diode packages. Bipolar transistors and their characteristics. Field-effect transistors and their characteristics. Transistor connection configurations. Transistor marking. Transistor current–voltage characteristics. Types of transistor packages. Structure and purpose of capacitors. Capacitance. Rated operating voltage of capacitors. Electrolytic capacitors. Ceramic capacitors. Mica capacitors. Metallized paper capacitors. Tantalum capacitors. Fixed, variable, and trimmer capacitors. Capacitor marking. Structure and purpose of resistors. Resistance value. Rated voltage and power dissipation of resistors. Types of resistors. Resistor marking. Purpose of inductors. Types of inductors. Wire type and diameter. Dimensions and inductance. Practical application of inductors.

Topic 3. Winding Assemblies of Electronic Equipment

Purpose of chokes. Chokes in power supply systems. Chokes in lighting systems. Chokes in filters. Chokes in welding equipment. Choke marking. Purpose of transformers. Operating principle and types. Windings, wire diameter, and transformer cores. Shell-type transformers. Core-type transformers. Toroidal transformers. Step-down transformers. Step-up transformers. Autotransformers. Isolation transformers. Transformer marking. Transformer characteristics.

Content Module 2. Analog and Digital Electronics

Topic 4. Electronic Control Devices

Purpose of switching stages. Switching stages using bipolar transistors. Switching stages using field-effect transistors. Switching stages using thyristors. Single-transistor electronic switches. Reinforced transistor switching stages. Relay-based switching stages. Purpose of electromagnetic relays. Normally closed relays. Normally open relays. Polarized and non-polarized relays. AC and DC relays. Stepwise relay control. Switching relay circuits. Self-latching relay circuits. Purpose and characteristics of drivers. Current drivers. Voltage drivers. Drivers in power supply systems. Drivers in LED lighting systems. Drivers in electric motor control systems.

Topic 5. Analog and Digital Electronic Instruments

Purpose of electrical measuring instruments. Methods of connecting measuring instruments. Voltmeters. Ammeters. Wattmeters. Frequency meters. Ohmmeters. Capacitance meters. Inductance meters. Specialized RLC meters. Oscilloscopes. Transistor testers. Analog and digital multimeters. Purpose of signal generators. Signal waveform. Signal frequency. Signal amplitude. Signal phase. Self-oscillators. Colpitts oscillator. Clapp oscillator. Hartley oscillator. Function generators. Digital generators. Purpose of signal amplifiers. Amplifier stages and connection circuits. Preamplifiers. Linear amplifiers. Power amplifiers. Amplifier classes. Amplifier characteristics. Purpose of power supplies. Classification of power supplies. Linear power supplies. Switching power supplies. Rectifiers in power supplies. Power supply transformers. Power supply filters. Power supply stabilizers. Power supply parameters. Active filters using transistors. Active filters using integrated circuits. Passive filters. Types of passive filters. Filters in power supplies. Filters in transmitting and receiving equipment. Purpose of quartz resonators. Quartz crystal oscillators. Quartz crystal filters.

Topic 6. Microprocessors and Microcontrollers

Microprocessors. Microprocessor architecture. Structure and operating principles of microprocessors and microcontrollers. Microcode and firmware. Registers and cache memory. Microprocessor cores. Clock frequency. Data and address buses. Power supply and cooling of microprocessors. Microprocessor TDP. x86 and x64 microprocessors. Specialized microprocessors.

Purpose of microcontrollers. Hardwired microcontrollers. Programmable microcontrollers. General-purpose and specialized microcontrollers.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	Not provided by educational program and curriculum	40	100
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

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Violations of academic integrity include:

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- Cheating
- Deception
- Improper advantage
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Classroom Behavior.

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Electrical Apparatus

National Transport
University

Electrical Apparatus

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Senior Lecturer Vyacheslav Tryshyn

Contact information Email: trv.argent@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component Electrical apparatus form the foundation of any power distribution and automation system, providing switching, control, and protection of electrical equipment against fault conditions. The modern development trend in this field is focused on the intellectualization of electrical apparatus, improving their reliability and ability to operate continuously under high load conditions. During the learning process, particular attention is paid to the physical phenomena occurring in switching devices, as well as to the issue of ensuring a long equipment life cycle through the proper selection of protective devices, which directly affects the fault-free operation and economic efficiency of power system operation.

Subject of study of this educational component includes the theoretical fundamentals of physical processes, the structure, and the operating principles of low- and high-voltage electrical apparatus. The course is aimed at training specialists to solve practical tasks related to the selection, adjustment, and operation of switching and protective equipment capable of ensuring high reliability, survivability, and safe operation of electrical networks.

Interdisciplinary connections.

The educational component integrates knowledge from:

- **technical sciences:** computer science, computer engineering, automation, and telecommunications – for understanding the hardware and software foundations of networks;
- **navigation and engineering disciplines:** shipboard automated control systems, navigation information systems, and ship communication systems – for the practical application of network technologies in the maritime sector;
- **management sciences:** logistics, management, and transport process management – to ensure information support for managerial decision-making;
- **information security and maritime law** – to ensure compliance with safety requirements, data protection, and international standards in the field of maritime transport.

The educational component program consists of the following modules:

Content Module 1. Physical Fundamentals and Low-Voltage Switching Apparatus

Topic 1. Physical Phenomena in Electrical Apparatus

Operating principles of electrical apparatus, basic definitions, and classification. Electrodynamics forces in electrical apparatus; interaction of conductors during short circuits. Heating of electrical apparatus: energy losses and operating modes (continuous, short-time, intermittent duty). Thermal stability of apparatus. Electrical contacts: structure, contact resistance, and contact wear. Physics of the electric arc. Arc extinction processes in direct current (DC) and alternating current (AC) circuits. Arc-quenching devices and their types.

Topic 2. Switching Apparatus for Protection and Manual Control

Purpose and design of fuses. Time–current characteristics and fuse selection. Circuit breakers: types of trip units (electromagnetic, thermal, semiconductor). Protective characteristics and selectivity. Disconnect switches, cam switches, and changeover switches. Control pushbuttons and selector switches. Structural elements and rated parameters of low-voltage apparatus.

Topic 3. Electromagnetic Apparatus for Remote Control

Design and operating principle of contactors. Magnetic starters: purpose, connection schemes, and motor protection. Electromagnetic control relays: auxiliary relays, time relays, and voltage relays. Thermal overload relays. Main characteristics and tripping parameters of relays. Electromagnetic mechanisms of apparatus: pull-in and opposing force characteristics. Protection of coils against overvoltages during switching operations.

Content Module 2. High-Voltage Apparatus and Measuring Devices

Topic 4. High-Voltage Circuit Breakers and Arc-Quenching Systems

Purpose and operating modes of high-voltage circuit breakers. Types of breakers: SF₆ (gas-insulated), vacuum, oil, and air circuit breakers. Design and main structural elements. Processes of interrupting high currents and voltage recovery across contacts. Operating mechanisms of high-voltage circuit breakers (electromagnetic, spring-operated, pneumatic). Rated parameters and selection criteria for power system applications.

Topic 5. Disconnecting Apparatus and Current-Limiting Devices

Purpose of disconnectors and provision of a visible circuit break. Isolating switches and earthing switches: operating principles and interlocking. Load break switches. Current-limiting reactors: design, operating principle, and reactance calculation. Protection of equipment against short-circuit currents. Design features of outdoor and indoor installation apparatus.

Topic 6. Instrument Transformers and Overvoltage Protection Devices

Current transformers (CTs): design, operating modes, accuracy classes, and connection schemes. Errors of current transformers. Voltage transformers (VTs): construction, connection schemes, and protection. Devices for protection against lightning and switching overvoltages. Non-linear surge arresters (metal-oxide arresters) and spark gaps: design and volt–ampere characteristics. Selection of measuring and protective devices for switchgear installations.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points	
Module 1					Module 2					Module 3 – Individual Assignment (IA)			
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
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Energy-Efficient Technologies in Shipboard Electrical Systems

National Transport
University

Energy-Efficient Technologies in Shipboard Electrical Systems

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Doctor of Philosophy (PhD) in Specialty 271 “River and Maritime Transport”, Senior Lecturer Anastasiia Trofymenko

Contact information Email: nasty940815@ukr.net

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday 14:30 – 16:00

Annotation of the educational component Energy efficiency of shipboard systems at the present stage is a key factor in the competitiveness of the fleet and in meeting stringent international environmental standards. The implementation of energy-saving technologies makes it possible to significantly reduce fuel consumption and emissions of harmful substances into the atmosphere. The problem of optimizing energy consumption covers all stages—from power generation to its rational use by shipboard consumers. Of particular importance is the introduction of monitoring systems and intelligent control solutions, which contribute to increasing the ship’s energy performance and reducing operating costs.

Subject of study of this educational component comprises modern methods and technical means for improving the efficiency of shipboard electrical power systems. The course is aimed at training specialists in ship energy consumption management, the use of energy audit tools, and the optimization of machinery operation, ensuring cost-effective and environmentally safe ship operation in compliance with MARPOL requirements.

Interdisciplinary connections.

The educational component integrates knowledge from:

- **technical sciences:** computer science, computer engineering, automation, and telecommunications – for understanding the hardware and software foundations of networks;
- **navigation and engineering disciplines:** shipboard automated control systems, navigation information systems, and ship communication systems – for the practical application of network technologies in the maritime sector;
- **management sciences:** logistics, management, and transport process management – to ensure information support for managerial decision-making;
- **information security and maritime law** – to ensure compliance with safety requirements, data protection, and international standards in the field of maritime transport.

The educational component program consists of the following modules:

Content Module 1. Energy Efficiency of Electric Power Generation and Distribution

Topic 1. International Standards and Monitoring of Ship Energy Efficiency

Content: Concept of ship energy efficiency. International requirements of MARPOL Annex VI. Energy Efficiency Design Index (EEDI) and operational indices EEXI and CII. Ship Energy Efficiency Management Plan (SEEMP). Methods for auditing and monitoring electrical energy consumption on board ships.

Topic 2. Optimization of Ship Power Plant Operation

Content: Efficient operating modes of generator sets. Parallel operation and optimal load sharing. Use of shaft generators and Power Take-Off / Power Take-In (PTO/PTI) systems. Impact of power quality on losses: reactive power compensation and harmonic filtering in shipboard electrical networks.

Topic 3. Energy Saving in Electric Drive Systems

Content: Application of Variable Frequency Drives (VFDs) for shipboard pumps and fans. Flow-head control law and fuel-saving potential. Efficiency of modern electric motors of IE3 and IE4 classes. Soft-start systems and their impact on the ship's power system.

Content Module 2. Innovative Technologies and Intelligent Control

Topic 4. Hybrid and Fully Electric Ship Power Plants

Content: Architecture of hybrid Energy Storage Systems (ESS). Use of battery systems for peak shaving and as spinning reserve. Shore Power technology—supplying electrical power to ships from shore during berthing.

Topic 5. Energy-Efficient Ship Lighting and Auxiliary Systems

Content: Modernization of lighting systems: transition to LED technologies and intelligent lighting control. Energy efficiency of ship HVAC (heating, ventilation, and air conditioning) systems. Automation of ballast and fuel operations aimed at minimizing energy consumption.

Topic 6. Intelligent Energy Management Systems (EMS)

Content: Principles of designing shipboard Energy Management Systems. Load forecasting and automatic control of consumers. Integration of renewable energy sources into shipboard electrical networks. Digital twins of ships for optimizing energy consumption.

Assessment methods

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Assessment

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Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
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Installation, Commissioning, and Maintenance of Electrical Equipment

National Transport
University

Installation, Commissioning, and Maintenance of Electrical Equipment

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Navigation and Operation of Technical Systems in Water Transport

Lectures and practical classes are conducted Oleksandr Kyrychenko, PhD in Engineering, Associate Professor

Contact information Email: askyrychenko@gmail.com

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Thursday 14:30 – 16:00

Annotation of the educational component. The quality of installation and commissioning of shipboard electrical equipment directly determines the duration of its subsequent fault-free service life. During operation, the need for defect inspection, restoration, and post-repair testing of machines and apparatus inevitably arises. Under modern conditions, the focus is shifting toward preventive maintenance methodologies and the rapid restoration of equipment operability by the ship's crew or specialized shore-based services. Issues of reliability, maintainability, and compliance with testing procedures form the foundation for keeping a vessel in proper technical condition.

Subject of study of this educational component comprises the technological processes of installation, diagnostic methods, and repair techniques for shipboard electrical equipment. The course is aimed at training specialists to carry out maintenance (MRO), defect inspection, and commissioning of automation systems and power machinery, ensuring compliance of the vessel with the requirements of classification societies and the safety of its operation.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Higher Mathematics – calculations of power output, efficiency, load distribution, reliability indicators, and basic optimization of operating modes;
- Physics – fundamentals of mechanics, thermodynamics, fluid dynamics, heat transfer, and electricity as applied to ship power plants and auxiliary systems;
- Theoretical Mechanics – analysis of motion, equilibrium, force transmission, and kinematic schemes of ship machinery;
- Strength of Materials – assessment of strength, stiffness, fatigue resistance, and durability of components, shafts, bearings, and structural elements of machinery;
- Engineering and Computer Graphics – interpretation of technical drawings, piping and instrumentation diagrams (P&ID), electrical schematics, layouts, and 3D models of ship systems;
- Electrical Engineering and Electronics – principles of operation of ship electrical networks, generators, motors, control devices, and basic automation elements;
- Safety of Life at Sea and Occupational Safety – application of safety requirements, risk assessment, and

safe working practices during operation and maintenance of ship power plants.

The educational component program consists of the following modules:

Content Module 1. Installation, Testing, and Maintenance of Shipboard Electrical Equipment

Topic 1. Shore-Based and Shipboard Installation of Electrical Equipment

Technology of electrical equipment installation. Fabrication and installation of switchboards, control panels, control stations, foundations, brackets, and frames. Modular installation of electrical equipment in workshops. Installation and grounding of electrical equipment. Cable laying.

Topic 2. Testing Procedures and Safety Requirements

Preparation for testing. Mooring (harbor) trials. Sea trials. Safety procedures during testing of electrical equipment.

Topic 3. Technical Maintenance of Electrical Equipment

Maintenance of electrical equipment. Maintenance levels: TO-1, TO-2, TO-3. Maintenance of electric drives. Maintenance of electrical machines. Maintenance of switchgear. Maintenance of electrical networks. Maintenance of lighting systems. Maintenance of remote control systems. Maintenance of low-current circuits. Maintenance of signaling systems. Maintenance of electric propulsion systems. Maintenance of batteries.

Content Module 2. Defect Inspection, Repair, and Post-Repair Testing of Shipboard Electrical Equipment

Topic 4. Defect Inspection of Shipboard Electrical Equipment

Testing and defect inspection instruments. Defect inspection of electrical networks and typical faults. Defect inspection of electrical machines and their malfunctions. Direct current electrical machines. Asynchronous (induction) electric motors. Defect inspection of transformers. Defect inspection of magnetic amplifiers. Defect inspection of switchboards and control equipment. Defect inspection of electrical measuring instruments and low-current circuits. Inspection of acid and alkaline batteries.

Topic 5. Repair of Shipboard Electrical Equipment

Repair of transformers, relays, and starters. Repair of switching apparatus. Repair of rheostats and heating elements. Repair of switchgear. Repair of lighting and signaling devices. Repair of electrical measuring instruments. Repair of engine-room and steering telegraphs. Repair of communication equipment. Repair and storage of batteries.

Topic 6. Post-Repair Testing of Electrical Equipment

Test benches, equipment, and instruments. Testing of direct current machines. Testing of transformers. Testing of alternating current machines. Testing of protection equipment. Testing of control equipment. Battery testing. Inspection and testing of electronic components.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Human Factors and Maritime Safety:

1. International Maritime Organization (IMO) – Conventions, Codes and Guidelines on Ship Safety and Marine Engineering [Electronic resource]. – Available at: <https://www.imo.org>
2. International Association of Classification Societies (IACS) – Unified Requirements and Technical Standards for Ship Machinery and Electrical Systems [Electronic resource]. – Available at: <https://iacs.org.uk>

3. DNV – Maritime Technical Rules, Recommended Practices and Training Materials [Electronic resource]. – Available at: <https://www.dnv.com/maritime>
4. Lloyd’s Register – Rules and Regulations for the Classification of Ships and Marine Engineering Guidance [Electronic resource]. – Available at: <https://www.lr.org>

Educational Resources:

Online Courses (MOOCs):

1. American Bureau of Shipping (ABS) – Marine Engineering, Electrical and Automation Resources [Electronic resource]. – Available at: <https://ww2.eagle.org>
2. Wärtsilä – Marine Power Plants, Auxiliary Systems and Technical Training Materials [Electronic resource]. – Available at: <https://www.wartsila.com/marine>
3. MAN Energy Solutions – Two-stroke and Four-stroke Marine Engines, Auxiliary Systems Documentation [Electronic resource]. – Available at: <https://www.man-es.com/marine>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature**Basic Literature:**

1. Marine Auxiliary Machinery / H. D. McGeorge. – 8th ed. – Butterworth-Heinemann, 2012.
2. Introduction to Marine Engineering / D. A. Taylor. – 2nd ed. – Butterworth-Heinemann, 1996.
3. Marine Diesel Engines / A. C. Reithmaier. – Oxford : Butterworth-Heinemann, 2014.

4. Marine Engineering Practice / A. T. Rowen. – London : Butterworth-Heinemann, 2010.
5. Ship Power Plants / V. A. Zubrilin. – London : CRC Press, 2018.
6. Marine Electrical Equipment and Practice / H. D. McGeorge. – 5th ed. – Butterworth-Heinemann, 2011.
7. Electric Power Systems on Ships / R. R. Al-Ashkar. – London : IET, 2018.
8. Machinery Operation and Maintenance for Marine Engineers / T. C. Hales. – Springer, 2019.
9. Practical Marine Engineering / Alan L. Rowen. – Elsevier, 2009.
10. Marine Control, Automation and Monitoring Systems / C. A. Brebbia. – WIT Press, 2016.

Supplementary Literature:

1. ABB – Marine Electrical Systems, Power Generation and Automation Resources [Electronic resource]. – Available at: <https://new.abb.com/marine>
2. Kongsberg Maritime – Ship Automation, Remote Control Systems and Integrated Power Solutions [Electronic resource]. – Available at: <https://www.kongsberg.com/maritime>
3. Marine Insight – Marine Engineering Articles, Tutorials and Technical Explanations [Electronic resource]. – Available at: <https://www.marineinsight.com>

Computer Graphics and 3D-Modeling

National Transport
University

Computer Graphics and 3D-Modeling

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted Senior Lecturer of the Department, Zoia Dorofieieva

Contact information Email: dorofeevazoya.izm@gmail.com
Phone: +380 66 150 78 70

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, wednesday 13:00 – 14:30

Annotation of the educational component. A modern ship is a complex technical system, the efficient operation of which is impossible without the use of information and communication technologies (ICT) in design, modeling, and visualization of technical processes. This educational component is aimed at developing students' skills in creating 2D and 3D models of ship electrical equipment and automation systems, preparing technical documentation according to standards, and applying AutoCAD software for engineering graphics. Studying this discipline provides practical training for future specialists to perform professional tasks using modern ICT in the operation of ship systems.

Subject of study of this educational component is the principles, methods, and software tools of computer graphics and 3D modeling, used to create, edit, and visualize technical documentation and spatial models of ship electrotechnical systems and automation devices.

Interdisciplinary connections with:

- humanities: art studies, cultural studies, aesthetics, philosophy — to understand artistic styles, cultural contexts, and aesthetic principles in creating graphical and 3D visualizations.
- social Sciences: psychology, communication studies, sociology — to consider the perception of visual information, the emotional impact of color, shape, and composition on users.
- technical Sciences: information technology, programming, computer engineering — for effective use of hardware and software, and optimization of 3D scenes and rendering.
- natural Sciences: physics, mathematics, geometry — for precise modeling of shapes, motion, lighting, materials, and spatial transformations.
- professional Educational Components: ship theory and construction, ship management, operation of ship power plants, life safety, basics of labor protection and medical assistance — for integrating 3D modeling into professional training directions for seafarers.
- medical and Biomedical Sciences: anatomy, biomechanics, medical visualization — for using 3D modeling in creating educational, research, and diagnostic materials.

The educational component program consists of the following modules:

Module 1. Application of ICT in Computer Graphics and Automated Design

Topic 1. Computer Graphics as Part of Information and Communication Technologies

The concept and role of computer graphics in engineering activities. Methods of graphical information representation. Hardware and software tools for graphic processing. Computer-aided design (CAD) systems as an example of ICT implementation in technical fields.

Topic 2. Using the AutoCAD ICT Environment for Engineering Tasks

Purpose, structure, and interface of AutoCAD. Program versions and their comparative characteristics. Menus, toolbars, dialog boxes. Customization of the workspace. Coordinate systems, point input methods, and snapping. Creating graphic primitives, assigning colors, line types, and thicknesses.

Topic 3. Engineering Methods for Editing Graphic Objects in AutoCAD

Main editing commands: move, copy, scale, rotate, mirror, trim, and extend. Use of object snaps for accuracy. Working with drawing layers: creation, renaming, color/type/visibility settings. Object selection methods. Use of function keys and key combinations for faster operations.

Topic 4. Transformation and Standardization of Drawings in AutoCAD

Modification operations: copy, move, scale, rotate, mirror. Designing new elements, editing with grips. Drawing preparation according to standards (e.g., dimensioning, hatch patterns, compliance with technical graphics standards).

Topic 5. Automation of Drawing Standardization Using ICT in AutoCAD

Creating and using drawing templates. Working with title blocks and frames. Setting line, font, and size styles according to standards. Using layers for organization. Automating standardization with templates and libraries. Checking drawings for compliance. Preparing drawings for printing and export.

Module 2. Use of ICT in 3D Modeling of Maritime Technical Objects

Topic 6. Basics of 3D Design Using ICT in AutoCAD

3D modeling environment. Types of 3D models: wireframe, surface, solid. Tools for creating and editing volumetric objects. Transformations, rotation, scaling, combining 3D shapes. Scene display settings. Lighting, materials, textures, and colors. Visualization and obtaining realistic model images. Creating spatial models of parts and assemblies for technical and engineering design.

Topic 7. Solid and Surface Modeling as an Engineering Implementation of ICT

Building standard solids: prism, cylinder, cone, sphere, torus. Creating surface models based on 2D objects. Operations: union, subtraction, intersection of 3D bodies. Performing cuts and cross-sections. Methods for editing, transforming, and optimizing spatial objects for engineering projects.

Topic 8. Using ICT for Preparing, Composing, and Printing Engineering Documentation

Composing sheets in the drawing space. Setting sheet boundaries, formats, and image scales. Using frames, title blocks, and annotations according to standards. Preparing drawings for printing and export. Forming final technical documentation using AutoCAD tools.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Alison – 3D Modelling and Texturing With Blender [Electronic resource]. – Available at: <https://alison.com/course/3d-modelling-and-texturing-with-blender> (date of application: 28.08.2025). – Title from the screen.
2. Blender.org – Official Blender Tutorials [Electronic resource]. – Available at: <https://www.blender.org/support/tutorials/> (date of application: 28.08.2025). – Title from the screen.

3. edX – IITBombayX: Basic 3D Modeling using Blender [Electronic resource]. – Available at: <https://www.edx.org/learn/blender/iitbombay-basic-3d-modeling-using-blender> (date of application: 28.08.2025). – Title from the screen.
3. Graphics and Programming – Blender 3D Free Tutorials [Electronic resource]. – Available at: <https://www.graphicsandprogramming.net/eng/tutorial/blender> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1						Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	MW 1	Topic 6	Topic 7	Topic 8	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

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Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Dunn, Fletcher, Parberry, Ian. *3D Math Primer for Graphics and Game Development* [Electronic resource] / F. Dunn, I. Parberry. – New York : A K Peters/CRC Press, 2011. – 846 p. – Available at: <https://github.com/RPG59/books-1/blob/master/3D%20Math%20Primer%20for%20Graphics%20and%20Game%20Development%202nd%20Edition.pdf> (date of application: 28.08.2025). – Title from the screen.
2. Eck, David J. *Introduction to Computer Graphics* [Electronic resource] / D. J. Eck. – Huntington, NY : Hobart and William Smith Colleges, 2013. – ~541 p. – Available at: <http://math.hws.edu/graphicsbook/> (date of application: 28.08.2025). – Title from the screen.
3. Foley, James D., van Dam, Andries, Feiner, Steven K., Hughes, John F. *Computer Graphics: Principles and Practice* [Electronic resource] / J. D. Foley, A. van Dam, S. K. Feiner, J. F. Hughes. – Boston: Addison-Wesley, 2014. – 1175 p. – Available at: <https://archive.org/details/ComputerGraphicsPrinciplesAndPractice3rdEdition> (date of application: 28.08.2025). – Title from the screen.

4. Gambetta, Gabriel. *Computer Graphics from Scratch: A Programmer's Introduction to 3D Rendering* [Electronic resource] / G. Gambetta. – London : No Starch Press, 2018. – 248 p. – Available at: <https://gabrielgambetta.com/computer-graphics-from-scratch/> (date of application: 28.08.2025). – Title from the screen.
5. McKesson, Jason L. *Learning Modern 3D Graphics Programming* [Electronic resource] / J. L. McKesson. – Available at: <https://freecomputerbooks.com/Learning-Modern-3D-Graphics-Programming.html> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Alonso, Miguel & others. *3D Rendering: An Introduction* [Electronic resource] / M. Alonso et al. – Available at: <https://freecomputerbooks.com/3D-Rendering-An-Introduction.html> (date of application: 28.08.2025). – Title from the screen.
2. Blain, John M. *The Complete Guide to Blender Graphics: Computer Modeling and Animation, Volume One* [Electronic resource] / J. M. Blain. – London : Routledge, 2021. – 454 p. – Available at: <https://www.routledge.com/product/isbn/9781000940176> (date of application: 28.08.2025). – Title from the screen.
3. Blain, John M. *The Complete Guide to Blender Graphics: Computer Modeling and Animation, Volume Two* [Electronic resource] / J. M. Blain. – London : Routledge, 2021. – 382 p. – Available at: <https://www.routledge.com/product/isbn/9781000952339> (date of application: 28.08.2025). – Title from the screen.

Descriptive Geometry and Engineering

National Transport
University

Descriptive Geometry and Engineering

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted Senior Lecturer of the Department, Zoia Dorofieieva

Contact information Email: dorofeevazoya.izm@gmail.com
Phone: +380 66 150 78 70

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, wednesday 13:00 – 14:30

Annotation of the educational component. The educational component «Descriptive Geometry and Engineering Graphics» is aimed at developing students' spatial thinking skills and competencies in creating geometric projections and technical drawings in accordance with the requirements of technical documentation. The discipline ensures mastery of graphical methods for analyzing and reproducing structures used in the field of maritime and inland water transport. The acquired knowledge serves as a basis for further study of professionally oriented engineering disciplines.

The subject of study of this educational component is geometric forms, methods of their projection, and means of graphical representation of objects used in the field of maritime and inland water transport.

Interdisciplinary connections with:

– humanities: art studies, cultural studies, aesthetics, philosophy — contribute to understanding the fundamentals of composition, proportions, stylistics, and aesthetic principles necessary for producing high-quality drawings and graphical constructions.

– social sciences: psychology, communication studies, sociology — enable consideration of the peculiarities of graphical information perception, the influence of form, structure, and organization of drawings on readability and the effectiveness of technical information transfer.

– technical sciences: information technology, programming, computer engineering — ensure mastering modern computer graphics tools, CAD systems, and digital design and drawing preparation instruments.

– natural sciences: physics, mathematics, geometry — form the basis for accurate execution of projections, construction of spatial models, determination of shape parameters, and mutual positions of geometric elements.

– professional educational components: ship theory and construction, ship handling, operation of ship power plants, life safety, occupational safety and health — ensure practical application of drawings and graphical constructions in studying ship structures, technical documentation, and technological processes in maritime and river transport.

– medical and biomedical sciences: anatomy, biomechanics, medical visualization — contribute to understanding principles of constructing complex forms and structures and can be used to develop skills in working with geometric models of varying complexity.

The educational component program consists of the following modules:

Module 1. Descriptive Geometry

Topic 1. *Fundamentals of Engineering and Computer Graphics in Maritime Transport. Projection Method. Complex Drawing of a Point*

The subject of graphical training in shipbuilding and fleet operation. Fundamentals of projection, application of the orthogonal projection method for representing spatial objects of ship structures. Complex drawing of a point and construction of its projections onto three planes.

Topic 2. *Projection of a Line and a Plane in Maritime Engineering Problems*

Triple projection of a line, determination of its position relative to the projection planes, application to elements of the ship hull and machinery installations. True length of segments. Traces of lines and planes in technical schemes and drawings of ship structures.

Topic 3. *Methods of Projection Transformation in Spatial Problems of Shipbuilding*

Change of projection planes and the rotation method in solving spatial engineering problems. Rotation of points, lines, and planes encountered in the analysis of configurations of hull elements, machinery parts, and ship systems.

Topic 4. *Polyhedra and Their Sections in Applied Ship Structures*

Projection of prismatic and pyramidal forms characteristic of ship framing elements, superstructures, and technical units. Construction of sections by cutting planes when modeling ship structures.

Topic 5. *Intersection of Polyhedra and Construction of Developments of Ship Hull Elements*

Construction of lines of intersection of a plane with polyhedra, determination of the true size of faces. Fundamentals of creating developments of hull elements and metal plating, which are key for shipbuilding and ship repair.

Topic 6. *Curves and Surfaces in Shipbuilding and Marine Engineering*

Projection of curves: plane, spatial, and helical, including helical lines used in the design of propellers. Curvilinear surfaces of the ship hull and methods of constructing tangent planes to them.

Topic 7. *Axonometric Projections for Representing Ship Structures and Mechanisms*

Fundamentals of axonometry in technical depiction of ship equipment. Rectangular and oblique axonometric projections, isometric and dimetric constructions, application for representing details of engine-room equipment and navigation modules.

Module 2. Engineering Graphics

Topic 8. *Standards and Rules for Executing Technical Drawings in Maritime Transport (ESKD)*

Regulations and standards governing design documentation in shipbuilding and fleet operation. Formats, scaling, line types, material designations, and rules for preparing drawings of ship system assemblies.

Topic 9. *Detachable and Non-Detachable Joints in Ship Mechanisms and Structures*

Classification of threads and their graphical designation. Drawings of bolted, stud, keyed, and splined joints typical for ship engines, pumps, and gearboxes. Welded, riveted, adhesive, and soldered joints of hull structures and technical systems.

Topic 10. *Sketches and Working Drawings of Ship Mechanism Parts*

Methods of creating technical images of ship equipment parts. Designation of standard elements, requirements for drawings, construction of sketches from real objects in engine rooms, and preparation of working drawings based on sketches. Surface roughness, materials, and measuring instruments.

Topic 11. *Assembly Drawings of Ship Units and Specifications*

Structure of assembly drawings of ship mechanisms, systems, and hull structures. Principles of position designation and compilation of specifications in shipbuilding and operational documentation.

Topic 12. *Technologies of Computer-Aided Drawing Creation in AutoCAD for Maritime Transport Tasks*

Application of AutoCAD in shipbuilding, repair works, and technical operation of vessels. Basic commands, drawing parameters, methods of constructing and editing spatial models of ship parts and structures. Integration of ICT into graphical tasks of marine engineers and ship engineers.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Class Central – Descriptive Geometry and Civil Engineering Drawing (Harbin Institute of Technology) [Electronic resource]. – Available at: <https://www.classcentral.com/course/xuetangx-descriptive-geometry-civil-engineering-drawing-376036> (date of application: 28.08.2025). – Title from the screen.
2. [Engineering Drawing with CAD Applications – Open Educational Resources](https://open.umn.edu/opentextbooks/textbooks/engineering-drawing-with-cad-applications) [Electronic resource]. – Available at: <https://open.umn.edu/opentextbooks/textbooks/engineering-drawing-with-cad-applications> (date of application: 28.08.2025). – Title from the screen.
3. Open Textbook Library – Technical Drawing with CAD Applications [Electronic resource]. – Available at: <https://open.umn.edu/opentextbooks/details/technical-drawing-with-cad-applications> (date of application: 28.08.2025). – Title from the screen.
4. StudyLib – Descriptive Geometry [Electronic resource]. – Available at: <https://studylib.net/c/99307> (date of application: 28.08.2025). – Title from the screen.
5. Wikimedia Commons – Descriptive Geometry for Students in Engineering Science and Architecture [Electronic resource]. – Available at: https://commons.wikimedia.org/wiki/File:Descriptive_geometry_for_students_in_engineering_science_and_architecture.pdf (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester													Final assessment (credit)	Total points
Module 1								Module 2				Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	MW 1	Topic 6	Topic 7	Topic 8	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100	

For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.	20		
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Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Abbott, W. Practical Geometry and Engineering Graphics: A Textbook for Engineering and Other Students [Electronic resource] / W. Abbott. – Dordrecht : Springer, reprinted 2013. – 349 p. – Available at: <https://link.springer.com/book/10.1007/978-94-017-2742-6> (date of application: 05.02.2026). – Title from the screen.
2. Archive.org – Geometric and Engineering Drawing, 3rd Edition [Electronic resource] / K. Morling. – SI units. – Oxford : Elsevier, 2010. – 360 p. – Available at: <https://archive.org/download/bzbzbzTechDraw/Technical%20Drawing/Textbooks/Geometric%20and%20Engineering%20Drawing%203e%20SI%20c.2010%20-%20K.%20Morling.pdf> (date of application: 05.02.2026). – Title from the screen.
3. Brailov, Aleksandr Yurievich. Engineering Graphics: Theoretical Foundations of Engineering Geometry for Design [Electronic resource] / A. Y. Brailov. – Cham : Springer International Publishing, 2016. – 338 p. – Available at: <https://link.springer.com/book/10.1007/978-3-319-29719-4> (date of application: 05.02.2026). – Title from the screen.
4. Repository.kpi.kharkov.ua – Tasks and Exercises on Descriptive Geometry [Electronic resource] / O. V. Shoman, O. A. Kovtun, V. M. Holub. – Kharkiv : NTU “KhPI”, 2018. – 52. p. – Available at: <https://repository.kpi.kharkov.ua/items/023761be-eb62-438c-88bd-116f2ac62b53> (date of application: 05.02.2026). – Title from the screen.

Supplementary Literature:

1. Alonso, Miguel & others. 3D Rendering: An Introduction [Electronic resource] / M. Alonso et al. – Available at: <https://freecomputerbooks.com/3D-Rendering-An-Introduction.html> (date of application: 28.08.2025). – Title from the screen.
2. Blain, John M. The Complete Guide to Blender Graphics: Computer Modeling and Animation, Volume One [Electronic resource] / J. M. Blain. – London : Routledge, 2021. – 454 p. – Available at: <https://www.routledge.com/product/isbn/9781000940176> (date of application: 28.08.2025). – Title from the screen.
3. Blain, John M. The Complete Guide to Blender Graphics: Computer Modeling and Animation, Volume Two [Electronic resource] / J. M. Blain. – London : Routledge, 2021. – 382 p. – Available at: <https://www.routledge.com/product/isbn/9781000952339> (date of application: 28.08.2025). – Title from the screen.

Ecological and Technogenic Safety

National Transport
University

Ecological and Technogenic Safety

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted by Acting Head of Department, PhD in Pedagogical, Associate Professor, Nataliia Urum

Contact information

Email: nataliiaurum@gmail.com
Phone: +38 (067) 160-95-18

Address, classroom number

7 Izmailska Street, Izmail, classroom 1 (second floor)

Consultation hours

Tuesday, thursday 14:30 – 16:00

Annotation of the educational component. The educational component is aimed at developing higher education students' systemic knowledge of ecological and technogenic hazards, their origins, mechanisms of occurrence, and impacts on humans, society, and the environment. Special attention is given to the prevention of emergencies, assessment of ecological and technogenic risks, and the development of skills for safe professional activities under conditions of increased technogenic load. This discipline prepares future specialists for responsible professional activities in accordance with the requirements of environmental safety and sustainable development.

The subject of study of the educational component is the patterns of functioning of natural and natural-technogenic systems; sources of ecological and technogenic hazards; methods for assessing risks of emergencies; principles of environmental safety; and measures to prevent and minimize the negative consequences of accidents, disasters, and harmful impacts of economic activity on the environment.

Interdisciplinary connections with:

– natural sciences: higher and applied mathematics, probability theory, mathematical statistics, physics, chemistry, ecology – for quantitative assessment of ecological and technogenic risks, analysis of random influences of hazardous factors, modeling of pollutant dispersion, and prediction of accident consequences;

– technical sciences: reliability theory, electrical engineering, automation and control, ship power plants, technological processes – for analysis of causes of accidents and failures, assessment of technogenic hazards in technical systems, determination of critical operating modes, and development of safety measures;

– information technologies: data processing, geographic information systems, programming, databases, modeling systems – for collection and processing of ecological information, statistical analysis of accidents, simulation modeling of emergency scenarios, and support for decision-making in the field of safety;

– management sciences: management, risk management, logistics, technogenic and environmental safety management – for developing safety management systems, planning emergency response measures, organizing service interactions, and optimizing resource use;

- economic sciences: transport economics, enterprise economics, natural resource economics – for assessment of economic losses from accidents and pollution, analysis of effectiveness of environmental protection measures, and justification of investments to improve safety;
- regulatory and legal disciplines: maritime law, environmental law, civil protection, international and national regulatory acts on ecological and technogenic safety – for ensuring compliance with legislation, international conventions, standards, and regulations during emergency prevention and response.

The educational component program consists of the following modules:

Module 1. Theoretical foundations of ecological and technogenic safety

Topic 1. Environmental safety as a component of national security

Concept of environmental safety. Major contemporary ecological threats. Impacts of economic activities on the environment. Sustainable development concept. Environmental safety of Ukraine within the national security system.

Topic 2. Natural hazards and natural emergencies

Classification of natural hazards. Geophysical, hydrological, meteorological, and biological threats. Causes and consequences of natural disasters. Risk mitigation measures.

Topic 3. Technogenic hazards and accidents

Concept of technogenic hazard. Sources of technogenic risks. Industrial accidents and disasters. Impacts of technogenic factors on humans and the environment.

Module 2. Risk management and safety assurance

Topic 4. Assessment of ecological and technogenic risks

Concept of risk. Methods of qualitative and quantitative risk assessment. Analysis and forecasting of emergencies. Risk mapping.

Topic 5. Environmental monitoring

Environmental monitoring system. Key environmental indicators. Methods for monitoring air, water, and soil quality. Use of monitoring results for managerial decision-making.

Topic 6. Prevention of emergencies and mitigation of their consequences

Emergency prevention measures. Planning and organization of response. Protection of population and territories. Fundamentals of civil protection.

Topic 7. Legislative and regulatory framework of ecological and technogenic safety

Ukrainian legislation in the field of ecological and technogenic safety. Key laws, codes, national standards, and regulatory acts.

Topic 8. Ecological and technogenic safety in professional activity

Professional risks. Environmental responsibility of specialists. Formation of safety culture and ecological thinking.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Alison – Environmental Management and Legal Compliance [Electronic resource]. – Available at: <https://alison.com/course/environmental-management-and-legal-compliance> (date of application: 28.08.2025). – Title from the screen.

2. Alison – Environmental Management Studies [Electronic resource]. – Available at: <https://alison.com/course/environmental-management-studies> (date of application: 28.08.2025). – Title from the screen.
3. Alison – Health and Safety Hazards – Environmental Management Systems [Electronic resource]. – Available at: <https://alison.com/course/health-and-safety-hazards-environmental-management-systems> (date of application: 28.08.2025). – Title from the screen.
4. Class Central – Environmental Protection and Sustainability (Coursera) [Electronic resource]. – Available at: <https://www.classcentral.com/course/coursera-course-3-environmental-protection-and-sustainability-473018> (date of application: 28.08.2025). – Title from the screen.
5. Class Central – Environmental Safety (Saint Petersburg State University) [Electronic resource]. – Available at: <https://www.classcentral.com/course/environmental-safety-22667> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2									
Topic 1	Topic 2	Topic 3	MW 1	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Arezes, P. M., Barroso, M. P., Carneiro, P., Cordeiro, P., Costa, N., Melo, R. B., ... Baptista, J. S. Occupational and Environmental Safety and Health [Electronic resource] / P. M. Arezes, M. P. Barroso, P. Carneiro, P. Cordeiro, N. Costa, R. B. Melo, ... J. S. Baptista. – Cham : Springer, 2019. – XVI, 805 p. – Available at: <https://link.springer.com/book/10.1007/978-3-030-14730-3> (date of application: 28.08.2025). – Title from the screen.
2. Gulevets, D., Zaporozhets, A., Isaienko, V., Babikova, K. Environmental Control for Ensuring Cities Safety [Electronic resource] / D. Gulevets, A. Zaporozhets, V. Isaienko, K. Babikova. – Cham : Springer, 2021. – IX, 109 p. – Available at: <https://link.springer.com/book/10.1007/978-3-030-66710-8> (date of application: 28.08.2025). – Title from the screen.

3. Häring, Ivo. Technical Safety, Reliability and Resilience: Methods and Processes [Electronic resource] / I. Häring. – Singapore : Springer, 2021. – XXXVI, 308 p. – Available at: <https://link.springer.com/book/10.1007/978-981-33-4272-9> (date of application: 28.08.2025). – Title from the screen.
4. Raut, Sangeeta, Sen, Sudip Kumar. Environmental Engineering and Safety [Electronic resource] / S. Raut, S. Kumar Sen. – Jodhpur : Scientific Publishers, 2017. – 338 p. – Available at: <https://www.scientificpubonline.com/bookdetail/environmental-engineering-safety/9789386102409/542> (date of application: 28.08.2025). – Title from the screen.
5. Zio, E. Risk, Reliability and Sustainable Remediation in the Field of Civil and Environmental Engineering [Electronic resource] / E. Zio. – Amsterdam : Elsevier, 2022. – [n. p.] – Available at: <https://www.sciencedirect.com/book/9780323856980/risk-reliability-and-sustainable-remediation-in-the-field-of-civil-and-environmental-engineering> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Arezes, P. M., Baptista, J. S., Barroso, M. P., Costa, N., Cordeiro, P., Melo, R. B., ... Occupational and Environmental Safety and Health VI: Occupational Risk Assessment, Management and Case Studies [Electronic resource] / P. M. Arezes, J. S. Baptista, M. P. Barroso, N. Costa, P. Cordeiro, R. B. Melo, ... et al. – Cham : Springer, 2025. – IX, 510 p. – Available at: <https://link.springer.com/book/10.1007/978-3-031-82166-0> (date of application: 28.08.2025). – Title from the screen.
2. Carneiro, P., Costa, N., Arezes, P. M., Baptista, J. S., Barroso, M. P. Occupational and Environmental Safety and Health IV [Electronic resource] / P. Carneiro, N. Costa, P. M. Arezes, J. S. Baptista, M. P. Barroso, ... et al. – Cham : Springer, 2022. – XXIX, 704 p. – Available at: <https://link.springer.com/book/10.1007/978-3-031-12547-8> (date of application: 28.08.2025). – Title from the screen.
3. Santos Baptista, J., Melo, R. B., Carneiro, P., Castelo Branco, J., Costa, N., Guedes, J. C., ... Occupational and Environmental Safety and Health V [Electronic resource] / J. Santos Baptista, R. B. Melo, P. Carneiro, J. Castelo Branco, N. Costa, J. C. Guedes, ... et al. – Cham : Springer, 2024. – XIX, 845 p. – Available at: <https://link.springer.com/book/10.1007/978-3-031-38277-2> (date of application: 28.08.2025). – Title from the screen.

Ecological Management in Water Transport

National Transport
University

Ecological Management in Water Transport

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted by Acting Head of Department, PhD in Pedagogical, Associate Professor, Nataliia Urum

Contact information

Email: nataliiaurum@gmail.com
Phone: +38 (067) 160-95-18

Address, classroom number

7 Izmailska Street, Izmail, classroom 1 (second floor)

Consultation hours

Tuesday, thursday 14:30 – 16:00

Annotation of the educational component. The educational component is aimed at developing higher education students' systemic knowledge and practical skills in environmental management within the field of river and maritime transport. Special attention is given to managing the environmental impacts of shipping activities, implementing environmental management systems, complying with international and national environmental standards and conventions, and ensuring sustainable development of water transport.

The subject of study of the educational component includes the principles, methods, and tools of environmental management in water transport; systems for managing environmental safety in shipping companies and ports; international environmental standards and regulatory acts; and practices to reduce the negative impacts of vessels and port infrastructure on the surrounding natural environment.

Interdisciplinary connections with:

- natural sciences: ecology, chemistry, physics, hydrology – for understanding water pollution processes, transformation of hazardous substances, and the impact of transport activities on ecosystems;
- management sciences: management, strategic management, quality management – for the design and operation of environmental management systems in water transport enterprises;
- economic sciences: transport economics, natural resource economics – for evaluating the economic efficiency of environmental protection measures and ecological investments;
- regulatory and legal disciplines: environmental law, maritime law, international conventions on marine environment protection – for ensuring compliance with legislation in the field of environmental management.

The educational component program consists of the following modules:

Module 1. Theoretical foundations of environmental management

Topic 1. Essence and principles of environmental management

The concept of environmental management and its role in the overall management system of an enterprise. Goals, objectives, and functions of environmental management. Key principles of environmental management (preventive approach, systemic approach, responsibility, continuous improvement). Environmental policy of a water transport enterprise, its structure, and stages of formation. The concept of sustainable development and its implementation in river and maritime transport.

Topic 2. Regulatory and legal framework of environmental management in water transport

The system of international and national environmental legislation. Key provisions of Ukrainian environmental law. International conventions and agreements on the protection of marine and river environments. The role of international standards and guidelines in forming environmental policies for shipping companies and ports. Liability for violations of environmental legislation in the water transport sector.

Topic 3. Environmental issues in river and maritime transport

Main types of negative impacts of shipping on the environment. Sources of water pollution during vessel operation and port infrastructure activities. Ship emissions into the atmosphere, noise, and vibration pollution. Pollution of water bodies with oil products, ballast water, and waste. Impacts of shipping activities on aquatic and coastal ecosystems, biodiversity, and water quality.

Topic 4. Sustainable development and environmental policy in water transport

Concept and objectives of sustainable development. Interconnection of economic, social, and environmental components of transport development. Integration of environmental requirements into national and corporate transport policy. Environmental strategies for river and maritime transport. Role of innovations, “green” technologies, and energy-efficient solutions in ensuring sustainable development of the sector.

Module 2. Systems and tools of environmental management in water transport

Topic 5. Environmental management systems in water transport enterprises

Concept and structure of an Environmental Management System (EMS). International standards ISO 14001 and their application in shipping companies and ports. Implementation stages of EMS: planning, implementation, monitoring, and improvement. Internal and external environmental audits. Environmental reporting of water transport enterprises.

Topic 6. International environmental conventions and regulations in shipping

Role of the International Maritime Organization (IMO) in ensuring environmental safety in shipping. Key provisions and requirements of the MARPOL Convention. Standards for preventing marine pollution from ships. Monitoring compliance with international environmental requirements. Implementation of international standards into national legislation for river and maritime transport.

Topic 7. Environmental monitoring and impact assessment

Concept and objectives of environmental monitoring. Monitoring systems for the state of water bodies, atmospheric air, and coastal areas. Methods of environmental data collection and analysis. Environmental Impact Assessment (EIA) procedures for water transport facilities. Identification and evaluation of environmental risks in shipping and port operations.

Topic 8. Environmental responsibility and corporate social responsibility in water transport

Concept of environmental responsibility and its importance for professional activities of water transport specialists. Environmental culture and awareness of personnel. Corporate social responsibility (CSR) of shipping companies and port operators. Socio-environmental programs, sustainability reporting, and their role in enhancing the reputation and competitiveness of enterprises.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Alison – Environmental Management Studies [Electronic resource]. – Available at: <https://alison.com/course/environmental-management-studies> (date of application: 28.08.2025). – Title from the screen.
2. Class Central – Environmental Protection and Sustainability (Coursera) [Electronic resource]. – Available at: <https://www.classcentral.com/course/coursera-course-3-environmental-protection-and-sustainability-473018> (date of application: 28.08.2025). – Title from the screen.
3. Executive Certificate in Environmental Management for Shipping Companies [Electronic resource]. – Available at: <https://www.ispm.org.uk/Course/Details/282462> (date of application: 28.08.2025). – Title from the screen.
4. Professional Certificate in Environmental Compliance for Maritime Industry [Electronic resource]. – Available at: <https://www.ispm.org.uk/Course/Details/278733> (date of application: 28.08.2025). – Title from the screen.
5. UdeMy – Environmental sustainability in Maritime transport Industry [Electronic resource]. – Available at: <https://www.udemy.com/course/green-shipping/> (date of application: 28.08.2025). – Title from the screen.
6. IMO GreenVoyage2050 – An Introduction to Energy Efficient Ship Operation [Electronic resource]. – Available at: <https://greenvoyage2050.imo.org/energy-efficient-ship-operation-free-online-course-launched/> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 5	Topic 6	Topic 7	Topic 8	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
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- Academic plagiarism
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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

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Recommended literature

Basic Literature:

1. Andersson, Karin, Brynolf, Selma, Lindgren, J. Fredrik, Wilewska-Bien, Magda. Shipping and the Environment: Improving Environmental Performance in Marine Transportation [Electronic resource] / K. Andersson, S. Brynolf, J. F. Lindgren, M. Wilewska-Bien. – Berlin ; Heidelberg : Springer, 2016. – XXIII, 426 p. – Available at: <https://link.springer.com/book/10.1007/978-3-662-49045-7> (date of application: 28.08.2025). – Title from the screen.
2. Gallagher, Anthony W., Morris, Anthony James. Maritime Environmental Management: Principles and Practice [Electronic resource] / A. W. Gallagher, A. J. Morris. – London : Taylor & Francis Ltd, 2026. – 384 p. – Available at: <https://guardianbookshop.com/maritime-environmental-management-9780415853866> (date of application: 28.08.2025). – Title from the screen.
3. International Chamber of Shipping. Shipping & the Environment [Electronic resource] / International Chamber of Shipping. – 5th ed. – London : ICS, 2024. – [n. p.] – Available at: <https://www.weilbach.com/webshop/books/shipping-the-environment--icsshippingtheenvironment> (date of application: 28.08.2025). – Title from the screen.
4. Karim, Md Saiful. Prevention of Pollution of the Marine Environment from Vessels: The Potential and Limits of the International Maritime Organisation [Electronic resource] / M. S. Karim. – Cham : Springer, 2015. – XVI, 172 p. – Available at: <https://link.springer.com/book/10.1007/978-3-319-10608-3> (date of application: 28.08.2025). – Title from the screen.
5. Environmental Management Systems and ISO 14001 – Reference Manual [Electronic resource] / ISO & UNEP. – Geneva : ISO, 2015. – 102 p. – Available at: <https://www.iso.org/standard/60857.html> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Christodoulou-Varotsi, Iliana. Marine Pollution Control: Legal and Managerial Frameworks [Electronic resource] / I. Christodoulou-Varotsi. – London : Routledge, 2018. – 384 p. – Available at: <https://www.routledge.com/Marine-Pollution-Control-Legal-and-Managerial-Frameworks/Christodoulou-Varotsi/p/book/9781138856684> (date of application: 28.08.2025). – Title from the screen.
2. Luo, Meifeng, Yip, Tsz Leung (Eds.). Ports and the Environment: Maritime Policy and Management [Electronic resource] / M. Luo, T. L. Yip. – Abingdon : Routledge, 2016. – 120 p. – Available at: <https://www.routledge.com/Ports-and-the-Environment-Maritime-Policy-and-Management/Luo-Yip/p/book/9781138295285> (date of application: 28.08.2025). – Title from the screen.
3. IMO / Green Award Foundation Handbook on Environmental Standards for Shipping [Electronic resource] / Green Award Foundation. – Rotterdam : Green Award, 2022. – [n. p.] – Available at: <https://www.greenaward.org/> (date of application: 28.08.2025). – Title from the screen.

Materials Science and Technology

National Transport
University

Materials Science and Technology

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted by PhD in Technical Sciences, Senior Lecturer of the Department, Oksana Manapova

Contact information Email: man2apov@ukr.net
Phone: +380 95 467 67 06

Address, classroom number 7 Izmailska Street, Izmail, classroom 4 (second floor)

Consultation hours Thursday 13:00 – 14:30

Annotation of the educational component. The educational component is aimed at forming in higher education students a system of knowledge about the structure, properties, and processing technologies of structural materials used in shipbuilding and ship operation. Special attention is paid to the relationship between chemical composition, material structure, methods of thermal, thermochemical, and mechanical processing, and their service properties. The discipline provides training for future specialists in making well-reasoned choices of materials and technological processes, taking into account the operating conditions of ship structures as well as reliability, safety, and durability requirements.

Subject of study of the educational component comprises the patterns of formation of the structure and properties of metallic and non-metallic materials, the fundamentals of alloy theory and phase diagrams, the classification and characteristics of steels, cast irons, non-ferrous metals and alloys, as well as the technological processes of their manufacture and processing (casting, metal forming, welding, brazing, machining). The subject area also includes issues of material corrosion and methods of corrosion protection, which are of key importance for ensuring the safe and efficient operation of ships.

Interdisciplinary connections with:

– natural sciences: physics, chemistry, mathematics — for understanding the physical nature of interatomic bonds, phase transformations, stress–strain states of materials, analysis of phase diagrams, and quantitative evaluation of properties;

– general engineering and technical sciences: theoretical mechanics, strength of materials, engineering graphics, machine elements — to substantiate the selection of materials and technologies taking into account

loads, operating conditions, and design features of ship components;

– professionally oriented disciplines: shipbuilding, operation of ship power plants, ship repair technology — for applying knowledge of materials in the design, manufacture, welding, repair, and maintenance of ship structures and mechanisms;

– information and technological disciplines: engineering information systems, CAD/CAM/CAE technologies — for using modern tools for modeling material structures, analyzing technological processes, and optimizing production;

– environmental and safety disciplines: environmental and technogenic safety, occupational health and safety — for assessing the impact of materials and their processing technologies on the environment, ensuring safe working conditions, and complying with environmental regulations in shipbuilding and ship repair.

The educational component program consists of the following modules:

Module 1. Materials Science

Topic 1. Crystal Structure of Metals

Introduction. Materials science as a discipline. History of the development of the science of metals. Aggregate states of matter. Amorphous and crystalline bodies. Types of bonding in crystals and their influence on the structure and properties of solids. General characteristics of metals. Crystal structure of metals. Types of crystal lattices. Polymorphic transformations (allotropy) in metals. Anisotropic and isotropic substances. Defects of crystal structure: point, line, and surface defects. Methods for studying the structure of metals and alloys: macroscopic analysis, microscopic analysis, X-ray diffraction analysis.

Basic properties of materials. Stress. Concepts of elastic and plastic deformation. Mechanical properties of metallic materials: strength, hardness, ductility, impact toughness, brittleness, elasticity. Methods for testing the mechanical properties of metals. Technological properties of metals and methods for their determination. Physical properties of materials: color, density, thermal conductivity, electrical conductivity, heat capacity, melting, thermal expansion. Chemical properties. Service properties of materials.

Topic 2. Alloy Theory. Phase Diagrams of Iron–Carbon Alloys

Concept of alloys. Types of interaction between alloy components: formation of mechanical mixtures, formation of chemical compounds, formation of solid solutions. Concept of phase diagrams and methods of their construction. Phase rule. Phase diagrams of alloys with complete mutual solubility of components. Lever rule. Features of phase diagrams of alloys with limited solubility of components. Phase diagram of alloys with peritectic transformation. Phase diagrams of alloys forming chemical compounds.

Iron–carbon alloys. Characteristics of alloy components: iron and carbon. Characteristics of phase and structural constituents: ferrite, cementite, pearlite, austenite, ledeburite. Characteristics of critical points on the diagram. Transformations in steels and cast irons during heating and cooling. Practical application of the diagram.

Topic 3. Carbon Steels and Cast Irons: Classification, Designation, Application

Classification of steels by chemical composition, purpose, quality, production method, structure, and deoxidation method. Influence of permanent impurities on steel properties. Concept of carbon steels, their classification, structure, properties, designation, and application. Hypoeutectoid and hypereutectoid steels. Concept of cast irons and their classification by fracture type and structure. White cast irons. Graphitization of cast irons. Malleable and ductile (high-strength) cast irons. Methods of their production, chemical composition, structure, properties, designation, and application.

Topic 4. Heat Treatment of Steel

Heat treatment. Transformations occurring in steels during heating. Formation of austenite during steel heating depending on carbon content. Transformations of austenite during cooling. Characteristics of diffusion (pearlitic), diffusionless (martensitic), and intermediate transformations. Transformations of martensite and retained austenite during heating.

Types of heat treatment of steel, their classification and purpose. Main components of the technological process. Annealing. Normalizing. Structure and properties of steel after annealing and normalizing. Quenching of steels. Hardenability and depth of hardening. Tempering. Heat treatment defects and methods of prevention. Heat treatment of cast iron. New types of heat treatment.

Thermochemical treatment of metals. Elementary processes of thermochemical treatment (dissociation, adsorption, diffusion). Types of thermochemical treatment. Carburizing of steel: solid and gas carburizing. Nitriding of steel. Cyaniding and nitrocarburizing.

Topic 5. Alloy Steels and Their Use in Shipbuilding

Alloy steels: characteristics, classification, advantages and disadvantages. Influence of alloying elements on steel properties. Designation of alloy steels. Steels with special properties. Structural alloy steels (spring steels, bearing steels, corrosion-resistant steels, etc.). High-strength steels. Tool steels and alloys. Classification, designation, and application of foreign steels and alloys.

Corrosion of metals and alloys and methods of protection. Concept of corrosion and aggressive environments. Classification of corrosion processes. Chemical, electrochemical, and gas corrosion. Types of corrosion damage. Corrosion resistance of metals and alloys. Methods of protecting metals and alloys from corrosion.

Topic 6. Non-Ferrous Metals and Alloys. Non-Metallic Materials

Classification of non-ferrous metals. Properties of non-ferrous metals and alloys and areas of application. Aluminum and its alloys. Properties of aluminum. Aluminum alloys and their characteristics: duralumin, silumins. Heat treatment of aluminum alloys. Phase diagram of Al–Cu alloys. Types of heat treatment of aluminum alloys: annealing, quenching, aging. Application of aluminum-based alloys in shipbuilding. Titanium and characteristics of titanium-based alloys. Heat treatment of titanium alloys. Characteristics of magnesium-based alloys. Designation and properties of titanium- and magnesium-based alloys in shipbuilding. Copper and copper-based alloys. Impurities in copper. Designation and properties of brasses and bronzes. Application of copper-based alloys in shipbuilding.

General information on non-metallic materials. Plastics and their properties. Classification of plastics. Thermoplastic and thermosetting plastics. Wood materials. Ceramics: general information and classification. Mineral electrical insulating materials. Rubber materials. Inorganic materials (glass, ceramics). Adhesives. Composite materials.

Module 2. Technology of Structural Materials

Topic 7. Foundry Production. Metal Forming

General information on foundry production. Technology of manufacturing disposable molds and cores by manual methods. Molding sands: classification and requirements. Patterns. Gating systems. Casting properties of alloys. Methods of producing castings. Production of castings in sand molds. Types of gating systems. Preparation of molding and core sands. Manufacture of molds. Special casting methods: shell molding, investment casting, casting in metal molds, die casting. Features of producing castings from various alloys. Casting defects and their correction. Occupational safety and environmental protection in foundry production.

Essence of metal forming. Influence of various factors on metal plasticity. Classification of metal forming processes. Stress–strain state schemes. Technological properties. Rolling and its production: rolling methods and technological process. Products of rolling production. Extrusion. Drawing. Rolling of sheet and section metal (rolling). Forging. Forging operations. Forging equipment. Hot and cold stamping: shaping, technological process, equipment. Sheet metal stamping. High-speed stamping methods.

Topic 8. Welding and Brazing of Materials on Ships. Machining. Machine Tools

Welding. Classification of welding methods and welded joints. Structural and property features of welded joints. Fusion welding: manual arc welding, semi-automatic and automatic submerged arc welding, electroslag welding, laser welding, etc. Pressure welding: resistance welding, cold pressure welding, friction welding, ultrasonic welding, explosion welding. Welding defects. Features of welding the most common materials. Quality control of welded joints. Brazing.

Concept of machining by cutting. Mechanical processing of materials. Main cutting methods. Cutting process scheme and types of chips. Cutting tools. Physical fundamentals of the cutting process. Cutting parameters. Turning. Main parts and elements of cutting tools. Drilling, countersinking, and reaming. Milling. Types of milling cutters. Broaching. Grinding. Technological methods of finishing (final) surface treatment of machine parts. Special machining methods.

Classification of machine tools. Design and kinematics of metal-cutting machine tools. Types of chips. Shape formation on machine tools. Characteristics of metal-cutting tools. Classification of motions in machine tools: main motion and feed motion. Machining schemes of workpieces. Cutting regimes: cutting speed, feed, depth of cut. Fundamentals of kinematic setup of machine tools. Lathes. General

information. Drilling and boring machines. Milling machines. Grinding machines. Electrophysical and electrochemical machining methods.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Atlantic International University – Individual Course: Materials Science [Electronic resource]. – Available at: https://www.aiu.edu/aiu_courses/individual-course-materials-science/ (date of application: 28.08.2025). – Title from the screen.
2. DoITPoMS (Dissemination of IT for the Promotion of Materials Science, University of Cambridge) – Materials Science Teaching Resources [Electronic resource]. – Available at: <https://www.doitpoms.ac.uk/> (date of application: 28.08.2025). – Title from the screen.
3. edX – Learn Materials Science [Electronic resource]. – Available at: <https://www.edx.org/learn/materials-science> (date of application: 28.08.2025). – Title from the screen.
4. Materials Education (MatEdU) – Instructional Resources [Electronic resource]. – Available at: <https://materialeducation.org/resources/> (date of application: 28.08.2025). – Title from the screen.
5. MIT OpenCourseWare – Materials Science and Engineering Courses [Electronic resource]. – Available at: <https://ocw.mit.edu/> (date of application: 28.08.2025). – Title from the screen.
6. Steeluniversity – Steel and Metallurgy E-learning Platform [Electronic resource]. – Available at: <https://steeluniversity.org/> (date of application: 28.08.2025). – Title from the screen.
7. Wizape – Materials Science and Engineering Courses [Electronic resource]. – Available at: <https://wizape.com/English/Materials-Science-and-Engineering> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1						Module 2			Module 3 – Individual Assignment (IA)			
Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	MW 1	Topic 7	Topic 8		MW 2		

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating

- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. DoITPoMS (University of Cambridge). Teaching and Learning Packages in Materials Science [Electronic resource] / DoITPoMS. – Cambridge : University of Cambridge, 2025. – 400 p. – Available at: <https://www.doitpoms.ac.uk/> (date of application: 28.08.2025). – Title from the screen.
2. LibreTexts Engineering. Materials Science and Engineering [Electronic resource] / LibreTexts Engineering. – Davis : University of California, 2023. – 600 p. – Available at: https://eng.libretexts.org/Bookshelves/Materials_Science (date of application: 28.08.2025). – Title from the screen.
3. MIT OpenCourseWare. Introduction to Materials Science and Engineering [Electronic resource] / Massachusetts Institute of Technology. – Cambridge (MA) : MIT OCW, 2024. – 500 p. – Available at: <https://ocw.mit.edu/search/?d=Materials+Science+and+Engineering> (date of application: 28.08.2025). – Title from the screen.
4. Open University. Introducing Materials Engineering [Electronic resource] / The Open University. – Milton Keynes : The Open University, 2021. – 300 p. – Available at: <https://www.open.edu/openlearn/science-maths-technology/introducing-materials-engineering/content-section-overview> (date of application: 28.08.2025). – Title from the screen.
5. Pressbooks – Materials Science (BCcampus). Materials Science [Electronic resource] / Pressbooks OER Guide. – Victoria : BCcampus Press, 2023. – 450 p. – Available at: <https://pressbooks.bccampus.ca/oerguideuvic/chapter/materials-science/> (date of application: 28.08.2025). – Title from the screen.
6. Saylor Academy. Materials Science [Electronic resource] / Saylor Academy. – Washington, DC : Saylor Foundation, 2022. – 356 p. – Available at: <https://learn.saylor.org/course/view.php?id=61> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Ashby, M. F. *Materials Selection Charts (Educational Version)* [Electronic resource] / M. F. Ashby. – Cambridge : University of Cambridge, 2019. – Available at: <https://www.grantadesign.com/education/resources/> (date of application: 28.08.2025). – Title from the screen.
2. OER Commons. *Materials Science Open Textbooks & Resources* [Electronic resource] / OER Commons. – Online : ISKME, 2025. – Available at: <https://www.oercommons.org/browse?f.hubs=Open+Textbooks> (date of application: 28.08.2025). – Title from the screen.
3. Wikibooks. *Materials Science* [Electronic resource] / Wikibooks contributors. – San Francisco : Wikimedia Foundation, 2024. – Available at: https://en.wikibooks.org/wiki/Materials_Science (date of application: 28.08.2025). – Title from the screen.

Mathematical Processing of Navigational Information

National Transport
University

Mathematical Processing of Navigational Information

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted Senior Lecturer of the Department, Zoia Dorofieieva

Contact information Email: dorofeevazoya.izm@gmail.com
Phone: +380 66 150 78 70

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, wednesday 13:00 – 14:30

Annotation of the educational component. The educational component is aimed at developing in higher education students the ability to apply mathematical and statistical methods for the analysis, reliability assessment, diagnostics, and modeling of the operation processes of ship technical systems, electrical equipment, and automation systems. Special attention is paid to the processing of navigational and operational data, measurement accuracy assessment, prediction of deviations and failures, optimization of operating modes, and enhancement of the safety and efficiency of ship power and electrotechnical complexes. The discipline provides training for future specialists in the use of modern methods of mathematical and statistical analysis when making engineering and navigational decisions in the field of operation of ship technical systems.

Subject of study of this educational component is the principles and methods of mathematical and statistical analysis of navigational and operational information, numerical and approximate computation techniques, trigonometric and spherical trigonometric methods used for calculating a vessel's course, distances, and coordinates, as well as methods for error estimation and accuracy assessment of observations. The subject area also includes the processing, interpolation, and extrapolation of navigational data, statistical methods for analyzing the technical condition of ship systems, reliability and durability modeling of components, probabilistic methods for failure prediction, and mathematical and computer modeling of operational processes of ship technical systems and complexes.

Interdisciplinary connections with:

– natural sciences: higher and applied mathematics, probability theory, mathematical statistics — for formalizing random processes, processing navigational and operational data, building statistical reliability models, and forecasting the technical condition of ship systems;

– engineering sciences: reliability theory, electrical engineering, electrical machines, automation and control, ship power plants — for applying statistical methods in the analysis, diagnostics, and performance evaluation of ship technical systems and complexes;

– information technologies: computer data processing, programming, databases, modeling systems — for using software tools for statistical analysis, processing large volumes of operational information, and simulation modeling of failure and recovery processes;

–management sciences: management, logistics, technical systems management — for making informed decisions on equipment operating modes, resource optimization, and minimizing vessel downtime;

–economic sciences: transport economics, enterprise economics — for assessing the economic efficiency of operating technical systems and analyzing maintenance and repair costs based on statistical data;

–regulatory and legal disciplines: maritime law, international and national regulations on fleet technical operation — for considering the requirements of standards, classification society rules, and regulations in organizing the operation and maintenance of ship systems.

The educational component program consists of the following modules:

Module 1. Spherical Trigonometry and Algebraic Methods in Navigation

Topic 1. Algebra and Approximate Computations

Numerical methods and operations with approximate numbers. Assessment of computational errors and rounding methods. Use of navigational tables, data interpolation and extrapolation. Application of approximate computations in practical navigation tasks to determine course, distances, and vessel coordinates.

Topic 2. Trigonometry

Angle measurement. Degree and radian measures. Basic trigonometric functions and their properties. Trigonometric functions of small angles and their application in calculating azimuths, small course deviations, and determining vessel position. Practical use of trigonometric tables for navigational tasks.

Topic 3. Spherical Trigonometry

Basic definitions and concepts of spherical trigonometry. Associated polar spherical triangles. Sine and cosine theorems for spherical triangles. Solutions of right and quadrantal triangles. Application to the calculation of distances, azimuths, and course in marine navigation.

Topic 4. Calculation of Spherical Triangles in Navigation Problems

Calculation of great-circle routes (orthodromy) and determination of intermediate route points. Calculation of the altitude and azimuth of a celestial body (parallactic triangle). Use of calculations for navigational route planning and determination of vessel position under practical conditions.

Module 2. Mathematical Statistics and the Theory of Vessel Position Fixing

Topic 5. Elements of Probability Theory and Classification of Navigational Information

Random variables and their numerical characteristics: mathematical expectation, variance, standard deviation. Basic probability distributions and their application to error assessment. Classification of navigational information, properties and types of errors. Use of statistical methods to improve the accuracy of navigational calculations.

Topic 6. Processing of Navigational Information

Processing of direct measurements with accuracy assessment. Rejection of outliers using the Q-test criterion. Processing of measurements of equal and unequal accuracy. Use of arithmetic mean and weighted mean to improve the accuracy of navigational data. Practical methods for processing observation results and determining vessel position.

Topic 7. Determination of Vessel Position

Navigational parameters and functions. Isolines of navigational quantities. Lines of position and the gradient of a navigational parameter. Generalized method of lines of position for combining multiple observations and improving the accuracy of vessel position fixing. Practical application of methods in marine navigation.

Topic 8. Accuracy Assessment of Vessel Position

Accuracy assessment of fixes obtained from two independent lines of position. Error ellipse: calculation of major and minor semi-axes, orientation, and plotting on a navigational chart. Circular error probable (CEP). Use of statistical methods to analyze the accuracy of navigational calculations and select optimal methods for error assessment.

Assessment methods

– Test control

- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. MIT OpenCourseWare – Estimation and Control of Dynamical Systems [Electronic resource]. – Available at: <https://ocw.mit.edu/courses/2-160-identification-estimation-and-learning-spring-2006/> (date of application: 28.08.2025). – Title from the screen.
2. National Geospatial-Intelligence Agency – The American Practical Navigator (Bowditch) [Electronic resource]. – Available at: <https://msi.nga.mil/Publications/APN> (date of application: 28.08.2025). – Title from the screen.
3. International Association of Institutes of Navigation – Navigation: Journal of the ION [Electronic resource]. – Available at: <https://navi.ion.org> (date of application: 28.08.2025). – Title from the screen.
4. University of Colorado Boulder – Spherical Trigonometry and Navigation Notes [Electronic resource]. – Available at: <https://math.colorado.edu/~jonathanw/nav> (date of application: 28.08.2025). – Title from the screen.
5. Navigating the Sea of Data: A Comprehensive Review on Data Analysis in Maritime IoT Applications [Electronic resource]. – Applied Sciences, 2023. – Available at: <https://doi.org/10.3390/app13179742> (date of application: 28.08.2025). – Title from the screen.
6. How Safe Are the United Kingdom’s Ports? A Statistical Analysis Using Accident Data and AIS Vessel Movements [Electronic resource]. – Journal of Navigation, 2025. – Available at: <https://doi.org/10.1017/S0373463325101380> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 5	Topic 6	Topic 7	Topic 8	MW 2				

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

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Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

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Attendance and/or Activity Policy.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Bowditch, Nathaniel. The American Practical Navigator (Bowditch) [Electronic resource] / N. Bowditch. – Bethesda : National Geospatial-Intelligence Agency, 2019. – ~1 200 p. – Available at: <https://msi.nga.mil/Publications/APN> (date of application: 28.08.2025). – Title from the screen.
2. Grinstead, Charles M., Snell, J. Laurie. Introduction to Probability [Electronic resource] / C. M. Grinstead, J. L. Snell. – Providence : American Mathematical Society, 2019. – 510 p. – Available at: <https://math.dartmouth.edu/~prob/prob/prob.pdf> (date of application: 28.08.2025). – Title from the screen.
3. Weisstein, Eric W. Spherical Trigonometry [Electronic resource]. – Wolfram Research. – Available at: <https://mathworld.wolfram.com/SphericalTrigonometry.html> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Astronavigation [Electronic resource]. – Available at: <https://pdfcoffee.com/astronavigation-pdf-free.html> (date of application: 28.08.2025). – Title from the screen.
2. Navigation & Seamanship – Download Free PDF & EPUB Books [Electronic resource]. – Available at: <https://www.libramar.net/news/navigation/3-0-29> (date of application: 28.08.2025). – Title from the screen.
3. Short Book for Celestial Navigation [Electronic resource]. – Available at: <https://pdfcoffee.com/45036768-short-book-for-celestial-navigation-pdf-free.html> (date of application: 28.08.2025). – Title from the screen.

Media Literacy and Information Security

National Transport
University

Media Literacy and Information Security

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted Senior Lecturer of the Department, Zoia Dorofieieva

Contact information Email: dorofeevazoya.izm@gmail.com
Phone: +380 66 150 78 70

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, wednesday 13:00 – 14:30

Annotation of the educational component. This educational component is aimed at developing students' ability to critically analyze information and counter disinformation that may affect navigation safety. Special attention is given to digital hygiene skills, the fundamentals of cyber protection of shipboard systems, and the identification of information threats in professional activities. The discipline ensures the preparation of future specialists for safe work with information resources and technologies in the field of maritime and inland water transport.

Subject of study of this educational component is the principles, methods, and tools of media literacy and information security required for professional activity in the field of maritime and inland water transport, including technologies for information analysis and verification, methods for detecting manipulation and falsification in professional and operational communications, fundamentals of cyber hygiene and onboard information protection, as well as tools for countering information threats that may affect navigation safety.

Interdisciplinary connections with:

— humanities: philosophy, ethics, cultural studies, professional communication — for developing responsible, ethical, and culturally sensitive interaction with information in the international environment of a ship crew.

— social sciences: psychology, sociology, communication studies — for understanding the mechanisms of informational influence on crew behavior, preventing panic in crisis situations, and recognizing social engineering techniques and manipulative practices in maritime operations.

— technical sciences: information technologies, cybersecurity, navigation systems — for mastering technical protection tools, understanding the operating principles of AIS, ECDIS, ARPA, and GMDSS systems, and identifying characteristics of information threats that may affect ship operations.

— natural sciences: mathematics, logic, statistics — for developing critical thinking, verifying the accuracy of navigation data, analyzing information models and signals, and applying statistical methods to assess the reliability of messages.

— legal sciences: international maritime law, information law, IMO regulations — for complying with information processing regulations, responsibility for false reporting, and protection of crew service data.

The educational component program consists of the following modules:

Module 1. Fundamentals of Media Literacy in the Modern Information Environment

Topic 1. Media Literacy in the Context of Information Warfare

The essence and components of media literacy. Types of information and their properties. The level of media literacy development in Ukraine and worldwide. Information in wartime conditions and its influence on decision-making. Mechanisms for developing resistance to persuasion, psychological aspects of informational influence, and inoculation theory. Specific features of working with information by maritime professionals, particularly in interaction with international information sources and navigation information systems.

Topic 2. Fact-Checking and Detection of Media Manipulation

The concept of fact-checking and its importance in the context of information threats. Main criteria for identifying fake and manipulative messages. Tools for verifying the authenticity of photos and videos. Verification of volunteer initiatives and sources of financial assistance. Indicators of bots and trolls on social networks. Ukrainian and international fact-checking initiatives. Special emphasis on the importance of verified information for navigation safety, logistics, and international communication.

Topic 3. Information and Psychological Operations During War

The concept of information and psychological operations (IPSO), their structure, objectives, and tools. Traditional and modern methods of propaganda. Disinformation tactics used during armed conflicts. International and Ukrainian experience in countering IPSO. The role of professional critical thinking among water transport specialists working in multinational environments and navigating diverse information flows.

Module 2. Fundamentals of Information Security

Topic 4. The Concept and Structure of Information Security of the State, Society, and the Individual

The essence of information security, basic categories, and terminology. Information security of Ukraine, its components, areas of manifestation, objects and subjects of protection. Types of information threats and risk classification. Specific features of information security in the maritime sector, including threats to navigation data, ship communication systems, electronic logs, and port information systems.

Topic 5. International Cooperation in Information Security

The role of leading international organizations: International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE), Association for Computing Machinery (ACM), World Wide Web Consortium (W3C), National Institute of Standards and Technology (NIST), and International Organization for Standardization (ISO). Their contribution to standardization, cybersecurity, and the development of global information technologies. The importance of these organizations for water transport professionals, particularly in the field of international standards for navigation, communications, and digital ship security.

Topic 6. Threats to Information Security: Nature, Classification, and Manifestations

The main destabilizing factors of information security. Classification of information actions and threats. Sources of threats to individuals, society, and the state. Hierarchy of information threats and their impact on various spheres of life. Specific threats for maritime professionals, including cyberattacks on navigation systems, manipulation of electronic logistics services, and information risks during international transportation.

Topic 7. The Information Security System of Ukraine

State policy in the field of information security. Legislative and regulatory framework. Institutional system for ensuring information security, including state authorities, specialized services, and sectoral structures. The importance of information security for the safe functioning of the transport sector and international maritime infrastructure.

Topic 8. Security of Information, Information Resources, and Information Infrastructure

The concept of information, information relations, and information resources. Classification of information resources and electronic information systems. Features of protecting information resources in the transport sector. Electronic information resources of ships, port logistics centers, and navigation services; requirements for their reliability and continuity

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Alison – English for Media Literacy [Electronic resource]. – Available at: <https://alison.com/course/english-for-media-literacy> (date of application: 28.08.2025). – Title from the screen.
2. edX – Cybersecurity Courses for Beginners [Electronic resource]. – Available at: <https://www.edx.org/courses?q=cybersecurity+courses+for+beginners> (date of application: 28.08.2025). – Title from the screen.
3. SANS Cyber Aces – Cybersecurity Fundamentals Resources [Electronic resource]. – Available at: <https://www.sans.org/cyberaces> (date of application: 28.08.2025). – Title from the screen.
4. UNESCO – Free and Open Media and Information Literacy Course [Electronic resource]. – Available at: <https://www.unesco.org/en/articles/unesco-and-you-free-and-open-media-and-information-literacy-course-youth> (date of application: 28.08.2025). – Title from the screen.
5. UNESCO – Media and Information Literacy Courses [Electronic resource]. – Available at: <https://www.unesco.org/mil4teachers/en> (date of application: 28.08.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1				Module 2						Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	MW 1	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											40	100

For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.	20		
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Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Bernard, Deborah, Bobish, Greg, Hecker, Jenna, Holden, Irina, Hosier, Allison, Jacobson, Trudi, Loney, Tor, Bullis, Daryl. *The Information Literacy User's Guide: An Open, Online Textbook* [Electronic resource] / D. Bernard, G. Bobish, J. Hecker, I. Holden, A. Hosier, T. Jacobson, T. Loney, D. Bullis. – Geneseo, NY : Open SUNY Textbooks, 2014. – Available at: <https://milneopentextbooks.org/the-information-literacy-users-guide-an-open-online-textbook/> (date of application: 28.08.2025). – Title from the screen.
2. Council of Europe. *Internet Literacy Handbook* [Electronic resource] / Council of Europe. – Strasbourg : Council of Europe, 2017. – Available at: <https://edoc.coe.int/en/internet/7515-internet-literacy-handbook.html> (date of application: 28.08.2025). – Title from the screen.
3. *Introduction to Information Security* [Electronic resource]. – PDF (неофіційне джерело). – Available at: <https://engineering.futureuniversity.com/BOOKS%20FOR%20IT/Book%20Introduction%20to%20Information.pdf> (date of application: 28.08.2025). – Title from the screen.

Supplementary Literature:

1. Cyber Security Body of Knowledge (CyBOK) Version 1.1.0 [Electronic resource] / Awais Rashid et al. – 1067 p. – Available at: https://cybok.org/media/downloads/CyBOK_v1.1.0.pdf (date of application: 28.08.2025). – Title from the screen.
2. Cyber Security Handbook [Electronic resource]. – Available at: <https://cyber.gov.gr/wp-content/uploads/2025/03/Cybersecurity-Handbook-English-version-compressed.pdf> (date of application: 28.08.2025). – Title from the screen.
3. Cybersecurity Essentials [Electronic resource] / Charles J. Brooks, Christopher Grow, Philip A. Craig, Jr., Donald Short. – Available at: <https://welib.org/md5/2c35a95754aaef888c4221d52675779> (date of application: 28.08.2025). – Title from the screen.
4. Introduction to Cyber Security [Electronic resource] / J. Pande. – Available at: <https://uou.ac.in/sites/default/files/slm/Introduction-cyber-security.pdf> (date of application: 28.08.2025). – Title from the screen.
5. The InfoSec Handbook – An Introduction to Information Security [Electronic resource]. – Available at: <https://library.oapen.org/handle/20.500.12657/28165> (date of application: 28.08.2025). – Title from the screen.

Statistical Methods for Analysis and Modeling of the Operation of Technical Systems in Water Transport

National Transport University

Statistical Methods for Analysis and Modeling of the Operation of Technical Systems in Water Transport

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted Senior Lecturer of the Department, Zoia Dorofieieva

Contact information

Email: dorofeevazoya.izm@gmail.com
Phone: +380 66 150 78 70

Address, classroom number

7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours

Monday, wednesday 13:00 – 14:30

Annotation of the educational component. The educational component is aimed at developing students' abilities to apply statistical methods for the analysis, reliability assessment, diagnostics, and modeling of the operation of ship technical systems, electrical equipment, and automation devices. Special attention is given to the processing of operational data, assessment of the technical condition of equipment, failure prediction, optimization of operating modes, and improvement of the safety and efficiency of ship power and electrotechnical systems. This discipline prepares future specialists to use modern statistical analysis methods in making engineering decisions for the operation of ship technical systems.

The subject of study includes statistical methods for the collection, processing, analysis, and interpretation of operational information on the performance of ship technical systems and complexes; reliability and lifetime models of components; methods of statistical monitoring of technical condition; probabilistic failure models; and the fundamentals of mathematical and computer modeling of operational processes in water transport.

Interdisciplinary connections with:

– natural sciences: higher and applied mathematics, probability theory, mathematical statistics – for formalizing random processes, processing operational data, building statistical reliability models, and forecasting the technical condition of ship systems;

– technical sciences: reliability theory, electrical engineering, electric machines, automation and control, ship power plants – for applying statistical methods during performance analysis, diagnostics, and evaluation of the efficiency of ship technical systems and complexes;

– information technologies: data processing, programming, databases, modeling systems – for using software tools for statistical analysis, processing large volumes of operational information, and simulation modeling of failures and recoveries;

– operational disciplines: ship operation, diagnostics of ship equipment, technical maintenance and repair – for applying statistical analysis results in maintenance planning, failure forecasting, and improving ship equipment reliability;

- management sciences: management, logistics, technical system management – for making informed decisions on equipment operating modes, optimizing resources, and minimizing vessel downtime;
- economic sciences: transport economics, enterprise economics – for evaluating the economic efficiency of technical systems operation, analyzing maintenance and repair costs based on statistical data;
- regulatory and legal disciplines: maritime law, international and national regulations on fleet operation – for taking into account the requirements of standards, classification society rules, and regulations in the organization of operation and technical maintenance of ship systems.

The educational component program consists of the following modules:

Module 1. Statistical Analysis of Operational Data of Ship Technical Systems

Topic 1. Random Variables and Probability Distributions in Operational Tasks

Concepts of random events and random variables. Discrete and continuous random variables. Main probability distributions (normal, exponential, Weibull) and their application for describing the performance parameters of ship technical systems, electrical equipment, and automation device.

Topic 2. Statistical Characteristics and Parameter Estimation

Mean, variance, standard deviation, coefficient of variation. Sample estimates of distribution parameters. Confidence intervals. Practical application in processing measurement results of electrical and energy parameters of ship equipment.

Topic 3. Statistical Processing of Experimental and Operational Data

Formation of statistical samples. Variational series, histograms, empirical distribution functions. Hypothesis testing. Goodness-of-fit tests. Analysis of technical diagnostics results of ship systems.

Topic 4. Correlation and Regression Analysis in Operational Tasks

Functional and statistical dependencies between parameters. Correlation coefficient. Building regression models. Using regression analysis to assess the influence of operating modes on the technical condition of ship electrical equipment.

Module 2. Reliability Statistical Methods and Modeling of Ship Systems Operation

Topic 5. Main Reliability Indicators of Technical Systems

Concepts of reliability, faultlessness, durability, maintainability. Probability of failure-free operation. Failure intensity. Mean time to failure. Reliability of ship power and electrotechnical systems.

Topic 6. Statistical Failure Models of Ship Equipment Components

Exponential, Weibull, and normal laws applied in reliability tasks. “Bathtub curve.” Analysis of operational failure statistics of ship electrical equipment, automation, and control systems.

Topic 7. Processing of Failure and Recovery Statistics

Collection and systematization of failure data. Empirical distribution functions of failure-free operating time. Estimation of reliability indicators based on operational observations. Using statistics for maintenance planning.

Topic 8. Statistical Modeling and Forecasting of Technical Condition

Concept of a statistical model. Simulation modeling of failure and recovery processes. Use of random numbers in modeling. Forecasting the technical condition of equipment. Optimization of maintenance intervals based on statistical data.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points).

Learning resources

1. Coursera – Statistical Methods [Electronic resource]. – University of Leeds (Coursera). – Free to audit. – Available at: <https://www.coursera.org/learn/statistical-methods> (date of application: 28.05.2025). – Title from the screen.
2. Class Central – Statistical Learning for Reliability Analysis [Electronic resource]. – Swayam (India) free course. – Available at: <https://www.classcentral.com/course/swayam-statistical-learning-for-reliability-analysis-91739> (date of application: 28.05.2025). – Title from the screen.
3. Open Learning Initiative (Carnegie Mellon University) – Probability & Statistics [Electronic resource]. – CMU Open & Free. – Available at: <https://oli.cmu.edu/courses/probability-statistics-open-free/> (date of application: 28.05.2025). – Title from the screen.
4. Class Central – Data Analysis: Statistical Modeling and Computation in Applications [Electronic resource]. – MIT / edX (auditable). – Available at: <https://www.classcentral.com/course/data-analysis-massachusetts-institute-of-technolo-22414> (date of application: 28.05.2025). – Title from the screen.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 5	Topic 6	Topic 7	Topic 8	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.													

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

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assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

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If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Casella, G. OpenIntro Statistics [Electronic resource] / G. Casella, R. De Veaux, P. Velleman, D. Bock. – 4th ed. – OpenIntro, 2019. – 436 p. – Available at: <https://www.openintro.org/book/os/> (date of application: 28.05.2025). – Title from the screen.
2. Diez, D. M., Barr, C. D., Çetinkaya Rundel, M. OpenIntro Statistics, Fourth Edition [Electronic resource] / D. M. Diez, C. D. Barr, M. Çetinkaya Rundel. – 4th ed. – Boston : OpenIntro, 2019. – 436 p. – Available at: <https://www.openintro.org/book/os/> (date of application: 28.05.2025). – Title from the screen.
3. James, G. An Introduction to Statistical Learning: with Applications in R [Electronic resource] / G. James, D. Witten, T. Hastie, R. Tibshirani. – 2nd ed. – New York : Springer, 2021. – 607 p. – Available at: <https://www.statlearning.com/> (date of application: 28.05.2025). – Title from the screen.
4. Kuhn, M. Applied Predictive Modeling [Electronic resource] / M. Kuhn, K. Johnson. – New York : Springer, 2016. – 600 p. – Available at: <https://link.springer.com/book/10.1007/978-1-4614-6849-3> (date of application: 28.05.2025). – Title from the screen.

Supplementary Literature:

1. Crowder, M. J. Statistical Analysis of Reliability Data [Electronic resource] / M. J. Crowder et al. – 2nd ed. – Chichester : Wiley, 2016. – 325 p. – Available at: <https://onlinelibrary.wiley.com/doi/book/10.1002/9780470063991> (date of application: 28.05.2025). – Title from the screen.
2. Open Textbook Library – OpenIntro Statistics, Fourth Edition [Electronic resource] / D. M. Diez, C. D. Barr, M. Çetinkaya Rundel. – 4th ed. – Boston : OpenIntro, 2019. – 436 p. – Available at: <https://open.umn.edu/opentextbooks/textbooks/60> (date of application: 28.05.2025). – Title from the screen.
3. Zio, E. The Monte Carlo Simulation Method for System Reliability and Risk Analysis [Electronic resource] / E. Zio. – London : Springer, 2017. – 157 p. – Available at: <https://link.springer.com/book/10.1007/978-1-4471-4588-2> (date of application: 28.05.2025). – Title from the screen.

Applied Mechanics

National Transport
University

Applied Mechanics

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Natural Sciences, Mathematics and Engineering Disciplines

Lectures and practical classes are conducted by PhD in Technical Sciences, Senior Lecturer of the Department, Oksana Manapova

Contact information Email: man2apov@ukr.net
Phone: +380 95 467 67 06

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Applied Mechanics» focuses on students' study of fundamental laws of mechanics and their application in practical activities. The component encompasses general methods of structural, kinematic, and dynamic analysis of typical mechanisms and their individual elements, enabling the determination of rational parameters for machine mechanisms. Students examine the principles of operation, structure, fundamentals of engineering calculations, and design methods for parts and assemblies of general-purpose machines, including construction rules and standards that account for actual operating conditions and modern standard requirements. The course covers active and reactive forces acting on rod systems, internal forces arising in these systems, and parameters defining the stress-strain state of rods. The discipline is essential for training specialists in the field of maritime and inland water transport, providing foundational knowledge for understanding mechanical systems used in ship construction and operation.

Subject of study involves providing knowledge in the field of modern engineering methods of solid mechanics and deformable body mechanics, ensuring students' preparation in the fundamentals of machine design, familiarizing them with machine structure, operating principles, calculation fundamentals, and design methods for general-purpose parts and assemblies. The course examines mechanical systems, their components, force interactions, stress analysis, material behavior under load, and design principles for reliable and efficient mechanical structures used in maritime engineering applications.

Interdisciplinary connections with:

- higher Mathematics – for applying mathematical methods in mechanical calculations, solving differential equations of motion, and performing stress-strain analysis
- physics – for understanding fundamental principles of mechanics, dynamics, and material properties
- engineering Graphics – for technical drawing, design documentation, and visualization of mechanical systems and components
- materials Science – for selecting appropriate materials based on mechanical properties, strength characteristics, and operating conditions

- ship Construction – for applying mechanical principles to design and analysis of ship structures and hull components
- marine Engineering – for understanding propulsion systems, machinery, and mechanical equipment used aboard vessels
- technical Mechanics – for foundational knowledge of statics, kinematics, and dynamics
- machine Parts and Mechanisms – for detailed study of specific mechanical components and their design principles

The educational component program consists of the following modules:

Module 1. Theory of Mechanisms and Machines

Topic 1. Basic Concepts and Definitions. Structural Analysis and Synthesis of Mechanisms

Mechanisms, their structure and classification. Links, kinematic pairs, kinematic chains. Construction methods. Structural classification of planar mechanisms. Structural groups. Order and class of structural groups. Somov-Malyshev structural formula of kinematic chains. Local redundant constraints, their influence on machine operability and reliability.

Topic 2. Kinematic Analysis of Mechanisms

Kinematics of initial links of mechanisms. Determination of positions and displacements of links, trajectories of motion of their individual points. Determination of velocities and accelerations of individual points of links. Graphical, grapho-analytical, and analytical methods of kinematic analysis. Kinematic synthesis of mechanisms.

Topic 3. Force Analysis of Mechanism Motion. Dynamics of Machines

Determination of reactions in kinematic pairs. Force calculation of typical mechanisms. Mass balancing. Balancing of inertia forces of links. Balancing of rotating links. Energy characteristics of mechanisms. Efficiency coefficient. Reduced forces and moments. Determination of reduced and balancing forces by Zhukovsky's method.

Dynamic models of mechanisms. Reduction of forces and masses in mechanisms. Motion of mechanism under given forces. General equation of motion. Speed regulation of machine mechanisms.

Topic 4. Basic Concepts and Definitions of Strength of Materials

Concepts of strength, rigidity, and stability. External forces (loads and constraint reactions). Constant, variable, static, and dynamic loads. Elastic and plastic deformations. Linear deformations and shear deformations. Internal forces, method of sections. Total, normal, and shear stress. Objects of study: rods, plates, shells, and massive bodies. Dimensions of forces and stresses. Design schemes. Hypotheses and simplifications of strength of materials.

Module 2. Strength of Materials. Machine Parts

Topic 4. Basic Concepts and Definitions of Strength of Materials

Concepts of strength, rigidity, and stability. External forces (loads and constraint reactions). Constant, variable, static, and dynamic loads. Elastic and plastic deformations. Linear deformations and shear deformations. Internal forces, method of sections. Total, normal, and shear stress. Objects of study: rods, plates, shells, and massive bodies. Dimensions of forces and stresses. Design schemes. Hypotheses and simplifications of strength of materials.

Topic 5. Geometric Characteristics of Planar Cross-Sections. Internal Force Factors

Static moments of area, center of gravity of cross-section. Moments of inertia of planar figures and complex cross-sections. Moments of inertia relative to parallel axes. Relationship between moments of inertia during axis rotation. Determination of principal central axes of inertia direction. Principal moments of inertia. Moments of inertia of some simple cross-sections. Section moduli and radii of gyration of cross-sections.

Method of sections and diagrams of internal force factors. External force factors: P (force), M (moment), and q (distributed load). Internal force factors: axial force N, shear forces Q_y , Q_x , torque $M_z = M_{\text{torque}}$, bending moments M_y , M_x . Method of sections. Diagrams of internal force factors. Rule for determining axial force in rod cross-section, sign convention for N, construction of N diagrams. Rule for determining torque in rod cross-section, sign convention for M_{torque} , construction of M_{torque} diagrams. Beams and their supports. Rules for determining shear forces and moments, sign conventions for Q and M.

Construction of Q and M diagrams. Differential relationships in bending. Rules for checking correctness of Q and M diagrams.

Topic 6. Tension and Compression

Mechanical properties of materials. Stresses and deformations in tension and compression. Normal and shear stresses in transverse and inclined cross-sections. Longitudinal deformations, Hooke's law. Transverse deformations. Relationship between longitudinal and transverse deformations, Poisson's ratio. Testing of materials in tension. Tensile diagrams. Characteristics of strength and plasticity of materials. Testing of materials in compression. Strength and stiffness conditions. Safety factors. Allowable stresses. Types of calculations. Statically indeterminate problems.

Topic 7. Shear and Torsion

Pure shear. Stresses and deformations in shear. Hooke's law for shear. Strength condition in shear. Practical calculations for shearing and bearing. Deformations and stresses in torsion. Hooke's law for torsion. Determination of stresses in torsion of circular rods. Distribution of shear stresses in cross-section during torsion. Strength and stiffness conditions in torsion. Types of calculations in torsion.

Topic 8. Bending Deformation

Bending of statically determinate and statically indeterminate beams. Pure bending. Normal stresses in pure bending. Navier's formula. Distribution of stresses in rod cross-section during bending. Quality criterion of profile in bending. Shear stresses in bending, Zhuravsky's formula. Displacements in bending. Differential equation of elastic curve. Initial parameters method. Potential energy of elastic deformation in bending. Mohr's rule. Vereshchagin's method. Calculation of statically indeterminate beams.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

The final grade for studying the educational component is calculated using the following categories.

Learning resources

1. FutureLearn – Through Engineers' Eyes: Engineering Mechanics by Experiment, Analysis and Design [Electronic resource]. – Available at: <https://www.futurelearn.com/courses/through-engineers-eyes> (date of application: 28.08.2025). – Application-oriented engineering mechanics course with experiments and design context.
2. MIT OpenCourseWare – Mechanics & Engineering Materials Resources [Electronic resource]. – Available at: <https://ocw.mit.edu/> (date of application: 28.08.2025). – Comprehensive repository of free course materials on mechanics and related engineering topics.
3. MOOC List – Engineering Mechanics MOOC overview [Electronic resource]. – Available at: <https://www.mooc-list.com/tags/engineering-mechanics> (date of application: 28.08.2025). – Aggregated list of MOOCs related to engineering/applied mechanics (Coursera, edX, Skillshare etc.).
4. Skillshare – Engineering Mechanics: An Introduction [Electronic resource]. – Available at: <https://www.mooc-list.com/course/engineering-mechanics-introduction-skillshare> (date of application: 28.08.2025). – Short beginner-friendly introduction to principles of mechanics.

5. Udey – Applied Mechanics for Engineering Students [Electronic resource]. – Available at: <https://www.udemy.com/course/applied-mechanics-for-engineering-students/> (date of application: 28.08.2025). – Practical course introducing equilibrium, statics/dynamics and mechanics of materials.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.												

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to

semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Uicker, J. J. Theory of Machines and Mechanisms [Text] / J. J. Uicker, G. R. Pennock, J. E. Shigley. – 6th ed. – Cambridge University Press, 2023. – 720 p.
2. Rajput, R. K. A Textbook of Applied Mechanics [Electronic resource] / R. K. Rajput. – Available at: https://dvr1980.wordpress.com/wp-content/uploads/2020/01/applied_mechanics_theory_by_r_k_rajput-1.pdf (date of application: 28.08.2025). – Title from the screen.
3. Applied Strength of Materials for Engineering Technology [Electronic resource] / Core.ac.uk. – Available at: <https://core.ac.uk/download/pdf/47233878.pdf> (date of application: 28.08.2025). – Title from the screen.
4. Budynas, R. G. Shigley's Mechanical Engineering Design [Текст] / R. G. Budynas, J. K. Nisbett. – 10th ed. – McGraw-Hill Education, 2015. – 1104 p.
5. Applied Mechanics [Electronic resource] / MRCET Digital Notes. – Available at: https://mrcet.com/downloads/digital_notes/AE/II%20Year/APPLIED%20MECHANICS.pdf (date of application: 28.08.2025). – Title from the screen.

6. Vinogradov, O. Fundamentals of Kinematics and Dynamics of Machines and Mechanisms / O. Vinogradov. – CRC Press, 2000. – 384 p.

Supplementary Literature:

1. Strength of Materials [Electronic resource] / Vardhaman College. – Available at: <https://vardhaman.org/wp-content/uploads/2021/03/STRENGTH-OF-MATERIALS-1.pdf> (date of application: 28.08.2025). – Title from the screen.
2. Gahlaut, R. Monograph on Theory of Machines [Electronic resource] / R. Gahlaut // Shobhit Institute of Engineering & Technology. – Available at: <https://www.shobhituniversity.ac.in/pdf/econtent/Monograph-on-Theory-of-Machine-Raman-Gahlaut.pdf> (date of application: 28.08.2025). – Title from the screen.
3. Dynamics of Machines and Mechanisms [Electronic resource] / Alvarestech. – Available at: <http://alvarestech.com/temp/RoboAseaIRB6S2-Fiat/CinematicaExemplosManuaisConfigurador-DH-EMC/FundamentosdeCinematica%20eFinamicaMecanismos.pdf> (date of application: 28.08.2025). – Title from the screen.
4. Collins, J. A. Mechanical Design of Machine Elements and Machines: A Failure Prevention Perspective / J. A. Collins. – 2nd ed. – Wiley, 2010. – 896 p.
5. Principles and Use of Gears, Shafts and Bearings [Electronic resource] / Course No: M04-031. – CED Engineering. – Available at: <https://www.cedengineering.com/userfiles/Principles%20and%20Use%20of%20Gears,%20Shafts%20and%20Bearings-R1.pdf> (date of application: 28.08.2025). – Title from the screen.
6. Spektor, M. Machine Design Elements and Assemblies [Текст] / M. Spektor. – Industrial Press, 2020. – 432 p.
7. Clemens, A. B. Applied Mechanics and Strength of Materials [Electronic resource] / A. B. Clemens // Internet Archive. – International TextBook Company, 1906. – Available at: <https://archive.org/details/appliedmechanics003448mbp> (date of application: 28.08.2025). – Title from the screen.
8. Vable, M. Mechanics and Strength of Materials [Text] / M. Vable. – Springer, 2002. – 530 p.
9. Raeymaekers, B. Design of Mechanical Elements: A Concise Introduction to Mechanical Design Considerations and Calculations [Текст] / B. Raeymaekers. – Wiley, 2022. – 336 p.
10. Mechanical Design Engineering Handbook [Text] / ed. P. R. N. Childs. – Butterworth-Heinemann, 2013. – 840 p.
11. Applied Mechanics [Electronic resource] / Free Book Centre. – Available at: <https://www.freebookcentre.net/physics-books-download/Applied-mechanics.html> (date of application: 28.08.2025). – Title from the screen.

Effective Communication in Professional Activities

National Transport
University

Effective Communication in Professional Activities

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

“Effective Communication in Professional Activities” is a practice-oriented educational component aimed at developing the communicative competence of future maritime professionals. The course is based on the requirements of the International STCW Convention (with the 2010 Manila Amendments), the IMO Standard Marine Communication Phrases (IMO SMCP, Resolution A.918(22)), and the principles of Bridge Resource Management (BRM). According to IMO statistics, approximately 80% of maritime accidents are caused by human factors, with half of these attributed to ineffective communication. The educational component encompasses theoretical foundations of business communication; features of verbal and non-verbal interaction in a multicultural shipboard environment; standardised maritime communication (external and internal); active listening and feedback techniques; communication in critical and emergency situations; overcoming language and cultural barriers; leadership communication and team management; and modern means of professional communication.

The subject of study encompasses:

- theoretical foundations of communication: models of the communication process, barriers to effective communication, features of interpersonal and group interaction in a professional environment;
- standardised maritime communication: IMO Standard Marine Communication Phrases (IMO SMCP) for external (ship-to-ship, ship-to-shore) and internal (onboard) communication; radiotelephone procedures in accordance with ITU Radio Regulations; the International Code of Signals;
- communication skills for ensuring maritime safety: closed-loop communication technique, principles of Bridge Resource Management (BRM), communication within the GMDSS system, interaction with shore-based services (VTS, MRCC);
- intercultural communication: features of interaction in multicultural crews, overcoming language barriers, consideration of cultural differences (power distance, individualism/collectivism), prevention of communication misunderstandings;
- practical skills: active listening, providing and receiving feedback, assertive communication, conflict management through effective communication, communication in stressful and emergency situations;
- leadership communication: briefings and debriefings, task delegation, motivational communication, communication during watch handover.

The educational component aims to develop the general competency: the ability to communicate effectively and work as part of a team in a multicultural professional environment.

Interdisciplinary connections (general, not tied to specific educational programme)

The course has interdisciplinary connections with:

- humanities – for understanding the mechanisms of verbal interaction and constructing effective messages;
- psychological sciences – for studying the patterns of interpersonal interaction and conflict management;
- management sciences – for developing leadership communication skills and team management;
- social sciences – for understanding cultural differences and their impact on communication;
- technical sciences – for mastering the technical means of maritime communication;
- professional educational components – for integrating communication skills into professional maritime activities.

The educational component program consists of the following modules:

Module 1. Foundations of Effective Communication in the Maritime Industry

Topic 1. Theoretical Foundations of Professional Communication

The concept of communication and its role in the professional activities of seafarers. Models of the communication process: Shannon-Weaver linear model, interactive model, transactional model. Components of communication: sender, message, channel, receiver, feedback, noise. Barriers to effective communication: physical, semantic, psychological, cultural. IMO statistics: human factors and communication errors as causes of maritime accidents. Requirements of the STCW Convention for the communicative competence of maritime officers.

Topic 2. Standard Marine Communication: IMO SMCP

History of maritime communication standardisation: from SMNV (1977) to IMO SMCP (2001). Structure of IMO Standard Marine Communication Phrases: Part A (external communication) and Part B (onboard communication). Message markers: Instruction, Advice, Warning, Information, Question, Answer, Request, Intention. Phrases for ship-to-shore and ship-to-ship communication. Phrases for communication with VTS (Vessel Traffic Service). Standard phrases for emergency situations: Distress, Urgency, Safety. Practical application of SMCP in daily operations and emergency situations.

Topic 3. Verbal and Non-Verbal Communication Onboard

Features of oral communication in the maritime environment: clarity, conciseness, unambiguity. Closed-loop communication technique: message transmission, acknowledgement of receipt, verification of understanding. Non-verbal communication: body language, gestures, facial expressions, eye contact. Paraverbal means: tone of voice, speech rate, pauses, intonation. Features of non-verbal communication in different cultures. Communication in conditions of limited visibility and noise onboard.

Topic 4. Active Listening and Feedback

Listening as a key component of effective communication. Types of listening: passive, selective, active, empathic. Active listening techniques: paraphrasing, clarification, reflection of feelings, summarising. Barriers to effective listening and ways to overcome them. Feedback: concept, types (positive, constructive, negative). Rules for providing effective feedback: specificity, timeliness, behaviour orientation. Receiving feedback: openness to criticism, clarifying questions.

Module 2. Communication in Multicultural Environments and Crisis Situations

Topic 5. Intercultural Communication in Multicultural Crews

Globalisation of the maritime industry and cultural diversity of crews. Hofstede's cultural dimensions: power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance, long-term/short-term orientation. Impact of cultural differences on communication: direct vs indirect style,

high-context vs low-context cultures. Language barriers and strategies for overcoming them. Stereotypes and biases: recognition and overcoming. Building trust and mutual understanding in a multicultural team. Practical recommendations for effective intercultural communication onboard.

Topic 6. Communication in Bridge Resource Management (BRM)

The concept of Bridge Resource Management: history, purpose, principles. Communication as a key element of BRM. Distribution of roles and responsibilities on the bridge: communication aspects. Briefings before manoeuvres and operations: structure, content, delivery technique. Debriefings: analysis of completed operations, identification of errors, learning from experience. Situational awareness and its communication support. Assertiveness in communication: the right of every team member to speak up. Typical communication errors on the bridge and their prevention.

Topic 7. Communication in Emergency and Crisis Situations

Features of communication under stress and crisis conditions. Standard SMCP phrases for emergency situations: Mayday, Pan Pan, Sécurité. Communication during emergency drills and actual emergency situations. Interaction with the Maritime Rescue Coordination Centre (MRCC). Communication during evacuation: clarity of commands, passenger management. Post-incident communication: reporting, documentation, analysis. Psychological aspects of crisis communication: supporting victims, managing panic. The role of the master and senior officers in crisis communication.

Topic 8. Leadership Communication and Modern Means of Professional Communication

Communication as a leadership tool onboard. Leadership communication styles: directive, consultative, participative, delegative. Motivational communication: recognition, encouragement, constructive criticism. Communication during watch handover: standard procedures, exchange of critical information. Communication with shore offices and company management. Modern communication tools onboard: email, messaging systems, video conferencing. Documentary communication: reports, logs, orders. Ethics of professional communication: confidentiality, accuracy, responsibility for one's words.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test

Information resources

1. IMO – International Maritime Organization: <https://www.imo.org/>
2. ITU – International Telecommunication Union: <https://www.itu.int/>
3. IALA – International Association of Marine Aids to Navigation and Lighthouse Authorities: <https://www.iala-aism.org/>
4. The Nautical Institute: <https://www.nautinst.org/>
5. SIRC – Seafarers International Research Centre: <https://www.sirc.cf.ac.uk/>
6. MarTEL – Maritime Tests of English Language: <https://www.martel-tests.com/>
7. InterManager – International Ship Managers' Association: <https://www.intermanager.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

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Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

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regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
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- Cheating
- Deception
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- Bribery

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Classroom Behavior.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. IMO Standard Marine Communication Phrases (SMCP) / International Maritime Organization. – London : IMO, 2002. – (Resolution A.918(22)). URL: <https://www.imo.org/en/OurWork/Safety/Pages/StandardMarineCommunicationPhrases.aspx>
2. STCW including 2010 Manila Amendments: STCW Convention and STCW Code / International Maritime Organization. – 2017 ed. – London : IMO, 2017. – 418 p.
3. International Code of Signals / International Maritime Organization. – 2005 ed. – London : IMO, 2005. – 200 p.
4. The Human Element: A Guide to Human Behaviour in the Shipping Industry / Maritime and Coastguard Agency. – London : TSO, 2010. – 88 p.
5. Model Course 3.17: Maritime English / International Maritime Organization. – 2015 ed. – London : IMO, 2015. – 180 p.
6. GMDSS Manual / International Maritime Organization. – 2019 ed. – London : IMO, 2019. – 488 p.

Supplementary Literature:

1. Blakey, T. N. *English for Maritime Studies* / T. N. Blakey. – 2nd ed. – New York : Prentice Hall, 1987. – 208 p.
2. Cole, C. *A Textbook of Maritime Communication* / C. Cole, P. Trenkner. – Malmö : WMU Publications, 2012. – 350 p.
3. Flin, R. *Safety at the Sharp End: A Guide to Non-Technical Skills* / R. Flin, P. O'Connor, M. Crichton. – Farnham : Ashgate, 2008. – 317 p.
4. Hofstede, G. *Cultures and Organizations: Software of the Mind* / G. Hofstede, G. J. Hofstede, M. Minkov. – 3rd ed. – New York : McGraw-Hill, 2010. – 576 p.
5. Meyer, E. *The Culture Map: Breaking Through the Invisible Boundaries of Global Business* / E. Meyer. – New York : PublicAffairs, 2014. – 288 p.
6. Swift, A. J. *Bridge Team Management: A Practical Guide* / A. J. Swift. – 2nd ed. – London : The Nautical Institute, 2004. – 124 p.
7. Sampson, H. *International Seafarers and Transnationalism in the Twenty-First Century* / H. Sampson. – Manchester : Manchester University Press, 2013. – 224 p.
8. Progoulaki, M. *Dealing with Multicultural Human Resources in a Socially Responsible Manner: A Focus on the Maritime Industry* / M. Progoulaki, M. Roe // *WMU Journal of Maritime Affairs*. – 2011. – Vol. 10(1). – P. 7–23.
9. Oldenburg, M. *Occupational Risks and Challenges of Seafaring* / M. Oldenburg, X. Baur, C. Schlaich // *Journal of Occupational Health*. – 2010. – Vol. 52(5). – P. 249–256.
10. *International Aeronautical and Maritime Search and Rescue Manual (IAMSAR)* / International Maritime Organization, International Civil Aviation Organization. – London : IMO, 2022. – Vol. I–III.
11. Pritchard, B. *Maritime English Syllabus for the Modern Seafarer: Safety-Related or Comprehensive Courses?* / B. Pritchard // *WMU Journal of Maritime Affairs*. – 2003. – Vol. 2(2). – P. 149–166.
12. Trenkner, P. *The IMO Standard Marine Communication Phrases – Refreshing Grammar or Survival Kit?* / P. Trenkner // *Proceedings of the International Maritime English Conference*. – 2005. – P. 1–12.
13. Ziarati, R. *Communication and Practical Training Applied in Nautical Studies (CAPTAINS)* / R. Ziarati, M. Ziarati // *Proceedings of the International Maritime Lecturers' Association Conference*. – 2007. – P. 1–15.
14. Bocanegra-Valle, A. *Maritime English* / A. Bocanegra-Valle // *The Handbook of English for Specific Purposes* / eds. B. Paltridge, S. Starfield. – Chichester : Wiley-Blackwell, 2013. – P. 398–416.
15. Mukherjee, P. K. *Maritime Legislation* / P. K. Mukherjee. – 2nd ed. – Malmö : WMU Publications, 2002. – 472 p.
16. *Communication and Assertiveness* / International Chamber of Shipping. – London : ICS, 2019. – 32 p.
17. Hetherington, C. *Safety in Shipping: The Human Element* / C. Hetherington, R. Flin, K. Mearns // *Journal of Safety Research*. – 2006. – Vol. 37(4). – P. 401–411.
18. Barnett, M. *Barriers to Progress or Windows of Opportunity? A Study in Career Path Mapping in the Maritime Industries* / M. Barnett, D. Gatfield, C. Pekcan // *WMU Journal of Maritime Affairs*. – 2006. – Vol. 5(2). – P. 127–142.

Ethical and Religious Tolerance in Multinational Ship Crews

National Transport
University

Ethical and Religious Tolerance in Multinational Ship Crews

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information

Email: bairamova3456@gmail.com

Phone: +38 (095) 801-16-36

**Address, classroom
number**

7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours

Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

A modern vessel is a floating model of the global community, where representatives of dozens of countries and religions must work as a unified team in conditions of confined space and extreme situations. In such a unique environment, cultural competence and religious tolerance become not merely desirable qualities, but critically important skills for ensuring navigational safety and the effectiveness of maritime operations.

Subject of study of the educational component includes fundamental knowledge about world religions, cultural traditions, and ethnic characteristics, as well as applied skills in using modern digital technologies, conflict management, leadership, and psychological support in the specific conditions of maritime shipping. Students study theoretical foundations and practical mechanisms of forming cultural competence in members of multinational maritime crews; digital communication systems and online etiquette in a multicultural maritime environment; religious and cultural characteristics of major maritime nations of the world and their impact on organizing life on board vessels; methods of conflict management and mediation in conditions of intercultural interaction; strategies for leadership and management of multi-religious teams; protocols of international maritime business considering cultural differences; critical thinking technologies and countering religious extremism in the maritime environment; psychological aspects of adaptation and maintaining well-being of crew members in conditions of cultural diversity; digital tools and mobile technologies for ensuring effective intercultural interaction on board maritime vessels.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Humanities: religious studies, cultural studies, ethics, philosophy – for understanding cultural and religious foundations of behavior of different ethnic groups
- Social sciences: psychology, sociology, conflict studies – for studying mechanisms of interpersonal interaction and group dynamics in multicultural environments
- Management sciences: management, leadership, organizational behavior – for forming skills of effective management of multinational teams
- Technical sciences: information technology, digital communication – for mastering modern tools of intercultural interaction

- Professional educational components: maritime law, maritime resource management, navigational safety – for integrating principles of tolerance into professional maritime activities
- Medical sciences: mental hygiene, preventive medicine – for maintaining psychological well-being of the crew

The educational component program consists of the following modules:

Content Module 1. Cultural Competence and Digital Communication in Multinational Crews

Topic 1. Religious and Cultural Map of the Modern World for Seafarers

Religious geography of major maritime routes and world ports. Cultural and religious characteristics of the most numerous maritime nations: Filipinos, Indonesians, Indians, Ukrainians, Poles, Chinese, Bangladeshis. Demographics of modern international crews. Regional characteristics: Southeast Asia, Europe, Middle East, Africa. Digital resources for studying cultures (mobile applications, online platforms). Creating a cultural profile of the crew. Practical cases of real multinational crews of different shipping companies.

Topic 2. Digital Tolerance and Communications in Multicultural Crews

Online etiquette in intercultural communication. Use of social networks and messengers on board considering religious characteristics. Cyberbullying and religious discrimination in digital space: prevention and counteraction. Translation technologies for religious and cultural concepts. Creating inclusive chat rules for multinational crew. Video communication with family: respect for religious practices and privacy. Digital literacy in intercultural context. Ethics of using photos and videos with religious symbols. Conflict management in online environment.

Topic 3. World Religions in Practice: What a Seafarer Needs to Know

Christianity (Orthodoxy, Catholicism, Protestantism): basic principles, holidays, practices. Islam: foundations of faith, five pillars of Islam, religious prohibitions. Buddhism and Hinduism: philosophical foundations, meditative practices, value system. Judaism: traditions, kosher, celebrations. Religious diets and dietary restrictions: halal, kosher, vegetarianism, fasting. Religious holidays and their impact on work schedule. Prayer practices and organization of space for religious needs. Compilation of international calendar of religious holidays. Conflicts between religious requirements and maritime procedures.

Topic 4. Conflict Management in Multinational Crew

Types of conflicts in multicultural environment: interethnic, religious, linguistic, status-based. Early detection of signs of intercultural tension on board. Psychology of conflict in confined space of vessel. De-escalation techniques: active listening, empathy, mediation. Culturally-specific behavior patterns in conflict situations. Role of informal leaders in dispute resolution. Mental health and stress from cultural adaptation. Mobile applications for conflict management. Documentation and reporting of intercultural incidents. Role-playing games and simulations of conflict situations.

Content Module 2. Leadership and Psychological Safety in International Maritime Environment

Topic 5. Leadership and Management in Multi-Religious Crew

Modern leadership theories in intercultural context. Emotional intelligence of multinational crew leader. Adaptive leadership styles: from authoritarian to participative. Cultural differences in perception of power and authority. Creating inclusive corporate culture on vessel. Personnel motivation from different cultural traditions. Delegation of authority considering cultural characteristics. Feedback and performance evaluation in intercultural context. 360-degree assessment of leadership skills. Coaching and mentoring in multicultural team. Development of intercultural competence of leaders.

Topic 6. Etiquette and Protocol in International Maritime Business

International business protocol in different cultures: handshakes, greetings, business card exchange. Dress code and religious requirements: turbans, hijabs, religious symbols. Gifts and hospitality in different cultures: what is allowed and not allowed. Conducting negotiations considering cultural characteristics. Dining etiquette in international context. Time concepts of different cultures and punctuality. Nonverbal communication: gestures, facial expressions, distance. Protocol of official events and ceremonies. Cultural diplomacy in world ports. Simulations of international business meetings and inspections.

Topic 7. Critical Thinking and Countering Religious Extremism

Religious extremism and radicalization: concepts, signs, mechanisms. Recognition of early signs of radicalization among crew members. Cyber threats and religious propaganda in maritime communication networks. Fake news and disinformation on religious topics. Countering discrimination and hate speech on board. Algorithms for responding to suspicious religiously motivated behavior. Cooperation with law enforcement and security services. Protection of personal data and religious information. Critical thinking in analyzing religious content. Analysis of real cases of radicalization in maritime industry.

Topic 8. Psychological Resilience and Well-being in Multicultural Environment

Stress from cultural adaptation: causes, symptoms, consequences. Psychological support of crew members during adaptation period. Maintaining team spirit during long voyages. Prevention of depression and anxiety in isolated environment. Mobile applications for mental health and psychological support. Creating supportive atmosphere in team. Group exercises for cohesion of multicultural crew. Working with homesickness and culture shock. Development of stress resilience and emotional regulation. Planning activities to improve psychological climate on board.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Cultural and Religious Understanding:

1. Pew Research Center – Religion & Public Life [Electronic resource]. – Available at: <https://www.pewresearch.org/religion/>
2. BBC Religions – Guide to Religions [Electronic resource]. – Available at: <https://www.bbc.co.uk/religion/religions/>
3. Patheos – Explore the World's Faith [Electronic resource]. – Available at: <https://www.patheos.com>
4. Religious Literacy Project – Harvard Divinity School [Electronic resource]. – Available at: <https://rlp.hds.harvard.edu>
5. Pluralism Project – Harvard University [Electronic resource]. – Available at: <https://pluralism.org>
6. World Religions – Overview and Resources [Electronic resource]. – Available at: <https://www.religionfacts.com>

Intercultural Communication and Competence:

1. Hofstede Insights – Country Comparison Tool [Electronic resource]. – Available at: <https://www.hofstede-insights.com/country-comparison/>
2. The Culture Factor Group – Cross-Cultural Resources [Electronic resource]. – Available at: <https://www.culturefactor.com>
3. Commisceo Global – Cultural Awareness Training [Electronic resource]. – Available at: <https://www.commisceo-global.com>
4. GlobeSmart – Cultural Intelligence Platform [Electronic resource]. – Available at: <https://www.globesmart.com>
5. World Learning – Intercultural Communication [Electronic resource]. – Available at: <https://www.worldlearning.org>

Maritime-Specific Resources:

1. International Maritime Organization (IMO) – Human Element [Electronic resource]. – Available at: <https://www.imo.org/en/OurWork/HumanElement/Pages/Default.aspx>

2. International Labour Organization – Maritime Labour Convention 2006 [Electronic resource]. – Available at:: <https://www.ilo.org/global/standards/maritime-labour-convention/lang--en/index.htm>
3. International Transport Workers' Federation (ITF) [Electronic resource]. – Available at:: <https://www.itfglobal.org/en/sector/seafarers>
4. The Nautical Institute – Human Element [Electronic resource]. – Available at:: <https://www.nautinst.org/resources/human-element.html>
5. BIMCO – Manning and Training [Electronic resource]. – Available at:: <https://www.bimco.org/ships-ports-and-voyage-planning/crew-support>
6. International Chamber of Shipping (ICS) [Electronic resource]. – Available at:: <https://www.ics-shipping.org>

Seafarers' Welfare and Support:

1. International Seafarers' Welfare and Assistance Network (ISWAN) [Electronic resource]. – Available at:: <https://www.seafarerswelfare.org>
2. Mission to Seafarers [Electronic resource]. – Available at:: <https://www.missiontoseafarers.org>
3. Sailors' Society [Electronic resource]. – Available at:: <https://www.sailors-society.org>
4. Apostleship of the Sea (Stella Maris) [Electronic resource]. – Available at:: <https://www.stellamaris.org.uk>
5. Human Rights at Sea [Electronic resource]. – Available at:: <https://www.humanrightsatsea.org>

Conflict Resolution and Mediation:

1. Conflict Resolution Network [Electronic resource]. – Available at:: <https://www.crnhq.org>
2. Mediation.com – Conflict Resolution Resources [Electronic resource]. – Available at:: <https://www.mediation.com>
3. Program on Negotiation – Harvard Law School [Electronic resource]. – Available at:: <https://www.pon.harvard.edu>
4. International Association for Conflict Management [Electronic resource]. – Available at:: <https://www.iafcm.org>

Digital Tools and Communication:

1. Duolingo – Language Learning App [Electronic resource]. – Available at:: <https://www.duolingo.com>
2. Google Translate [Electronic resource]. – Available at:: <https://translate.google.com>
3. Culture Crossing Guide – Cultural Information [Electronic resource]. – Available at:: <https://www.culturecrossing.net>
4. Erin Meyer's Culture Map Tool [Electronic resource]. – Available at:: <https://erinmeyer.com/tools/>

Religious Calendars and Resources:

1. InterfaithCalendar.org – Multi-faith Calendar [Electronic resource]. – Available at:: <https://www.interfaithcalendar.org>
2. Time and Date – Religious Holidays [Electronic resource]. – Available at:: <https://www.timeanddate.com/holidays/>
3. BBC – Religious Festivals Calendar [Electronic resource]. – Available at:: <https://www.bbc.co.uk/teach/class-clips-video/religious-education-ks1-ks2-my-world-religions/zhgv47h>
4. Multi-Faith Calendar – Harvard University [Electronic resource]. – Available at:: <https://mfcal.fas.harvard.edu>

Countering Extremism and Critical Thinking:

1. RAND Corporation – Countering Violent Extremism [Electronic resource]. – Available at:: <https://www.rand.org/topics/countering-violent-extremism.html>
2. Center for Strategic and International Studies – Terrorism & Extremism [Electronic resource]. – Available at:: <https://www.csis.org/programs/transnational-threats-project/terrorism-and-homeland-security>
3. UNESCO – Preventing Violent Extremism through Education [Electronic resource]. – Available at:: <https://www.unesco.org/en/preventing-violent-extremism>
4. Media Literacy Now [Electronic resource]. – Available at:: <https://medialiteracynow.org>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: Intercultural Communication and Conflict Resolution [Electronic resource] / University of California, Irvine. – Available at: <https://www.coursera.org/learn/intercultural-communication>
2. edX: Cross-Cultural Communication [Electronic resource] / Hong Kong Polytechnic University. – Available at: <https://www.edx.org/learn/communication>
3. FutureLearn: Working with Cultural Diversity [Electronic resource] / Monash University. – Available at: <https://www.futurelearn.com/courses/cultural-diversity>
4. Coursera: Improving Communication Skills [Electronic resource] / University of Pennsylvania. – Available at: <https://www.coursera.org/learn/wharton-communication-skills>
5. edX: Leadership in Global Development [Electronic resource] / University of Queensland. – Available at: <https://www.edx.org/learn/leadership>
6. Coursera: Leading Diverse Teams & Organizations [Electronic resource] / University of Michigan. – Available at: <https://www.coursera.org/learn/diverse-teams>
7. FutureLearn: Understanding Religion in Contemporary Society [Electronic resource] / King's College London. – Available at: <https://www.futurelearn.com/courses/understanding-religion>
8. edX: World Religions Through Their Scriptures [Electronic resource] / Harvard University. – Available at: <https://www.edx.org/learn/religion>
9. Coursera: Conflict Transformation [Electronic resource] / Emory University. – Available at: <https://www.coursera.org/learn/conflict-transformation>
10. World Maritime University – Cultural Diversity in Maritime Operations [Electronic resource]. – Available at: <https://www.wmu.se/education/online-education>

Video Resources:

1. TED Talks: Culture [Electronic resource]. – Available at: <https://www.ted.com/topics/culture>
2. TED Talks: Religion [Electronic resource]. – Available at: <https://www.ted.com/topics/religion>
3. CrashCourse: World History [Electronic resource] / YouTube. – Available at: <https://www.youtube.com/playlist?list=PLBDA2E52FB1EF80C9>
4. CrashCourse: World Religions [Electronic resource] / YouTube. – Available at: <https://www.youtube.com/watch?v=TpcbfxtdoI8>
5. Harvard Divinity School – Religious Literacy Videos [Electronic resource]. – Available at: <https://www.youtube.com/c/HarvardDivinitySchool>

Mobile Applications:

1. Culture Trip – Cultural Guide App [Electronic resource]. – Available at: <https://theculturetrip.com>
2. JW Language – Multilingual Language App [Electronic resource]. – Available at: <https://www.jw.org/en/online-help/jw-language/>
3. HelloTalk – Language Exchange App [Electronic resource]. – Available at: <https://www.hellotalk.com>
4. Tandem – Language Exchange Community [Electronic resource]. – Available at: <https://www.tandem.net>
5. Athan – Prayer Times & Qibla Direction [Electronic resource]. – Available at: <https://athanapp.com>
6. Calm – Meditation and Mindfulness [Electronic resource]. – Available at: <https://www.calm.com>
7. Headspace – Meditation for Everyone [Electronic resource]. – Available at: <https://www.headspace.com>

Interactive Tools:

1. Cultural Intelligence Center – CQ Assessment [Electronic resource]. – Available at: <https://culturalq.com>
2. Global Leadership Foundation – Leadership Tools [Electronic resource]. – Available at: <https://www.g-l-f.org>
3. Intercultural Development Inventory (IDI) [Electronic resource]. – Available at: <https://idiinventory.com>

Research Databases:

1. JSTOR – Religious Studies & Cultural Anthropology [Electronic resource]. – Available at: <https://www.jstor.org>
2. Google Scholar – Intercultural Communication [Electronic resource]. – Available at: <https://scholar.google.com>
3. ResearchGate – Cultural Studies [Electronic resource]. – Available at: <https://www.researchgate.net>
4. SAGE Journals – Intercultural Communication [Electronic resource]. – Available at: <https://journals.sagepub.com>

Organizations and Institutes:

1. International Association for Cross-Cultural Psychology [Electronic resource]. – Available at: <https://www.iaccp.org>
2. Society for Intercultural Education, Training and Research (SIETAR) [Electronic resource]. – Available at: <https://www.sietarinternational.org>
3. International Academy for Intercultural Research [Electronic resource]. – Available at: <https://www.iair-online.org>
4. Center for Intercultural Dialogue [Electronic resource]. – Available at: <https://centerforinterculturaldialogue.org>
5. Global Ethic Foundation [Electronic resource]. – Available at: <https://www.weltethos.org/en/>
6. United Religions Initiative [Electronic resource]. – Available at: <https://www.uri.org>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Horck, J. Getting the Best from Multicultural Manning [Electronic resource] / J. Horck. – Malmö : WMU Publications, 2005. – 178 p.
2. Hofstede, G. Cultures and Organizations: Software of the Mind [Electronic resource] / G. Hofstede, G. J. Hofstede, M. Minkov. – 3rd ed. – New York : McGraw-Hill, 2010. – 576 p.
3. Trompenaars, F. Riding the Waves of Culture: Understanding Diversity in Global Business [Electronic resource] / F. Trompenaars, C. Hampden-Turner. – 3rd ed. – London : Nicholas Brealey, 2012. – 416 p.
4. Progoulaki, M. Managing Multicultural Human Resources: A Challenge for Ship Management [Electronic resource] / M. Progoulaki, M. Roe // WMU Journal of Maritime Affairs. – 2011. – Vol. 10(2). – P. 149–168.
5. Shan, D. Intercultural Communication in Multinational Crew Operations [Electronic resource] / D. Shan // Maritime Policy & Management. – 2014. – Vol. 41(3). – P. 223–239.
6. Gekara, V. O. Understanding Attrition in UK Maritime Education and Training [Electronic resource] / V. O. Gekara // Globalisation, Societies and Education. – 2009. – Vol. 7(2). – P. 217–232.

Supplementary Literature:

1. Ely, R. J. Cultural Diversity at Work: The Effects of Diversity Perspectives on Work Group Processes and Outcomes [Electronic resource] / R. J. Ely, D. A. Thomas // Administrative Science Quarterly. – 2001. – Vol. 46(2). – P. 229–273.
2. Meyer, E. The Culture Map: Breaking Through the Invisible Boundaries of Global Business / E. Meyer. – New York : PublicAffairs, 2014. – 288 p.
3. Lewis, R. D. When Cultures Collide: Leading Across Cultures [Electronic resource] / R. D. Lewis. – 3rd ed. – Boston : Nicholas Brealey, 2006. – 599 p.
4. Pratt, D. Religious Literacy: Traditions and Scriptures [Electronic resource] / D. Pratt, R. A. Birch. – Auckland : Wanganui Quaker Press, 2011. – 245 p.
5. Sampson, H. International Seafarers and Transnationalism in the Twenty-First Century [Electronic resource] / H. Sampson. – Manchester : Manchester University Press, 2013. – 224 p.
6. Thomas, D. C. Cultural Intelligence: Living and Working Globally [Electronic resource] / D. C. Thomas, K. Inkson. – 2nd ed. – San Francisco : Berrett-Koehler, 2009. – 240 p.

Leadership and Team Interaction Management (Teambuilding)

National Transport
University

Leadership and Team Interaction Management (Teambuilding)

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information

Email: bairamova3456@gmail.com

Phone: +38 (095) 801-16-36

**Address, classroom
number**

7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours

Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component “Leadership and Team Interaction Management (Teambuilding)” is designed to develop competencies in effective leadership and team management within the context of shipboard operations. The course examines theoretical foundations of leadership, models of team interaction, features of ship crew formation and development, personnel motivation methods, conflict management strategies, and decision-making in critical situations. Particular attention is given to the specifics of the maritime industry: multinational crew composition, hierarchical vessel structure, working in conditions of isolation and increased risk. The course is based on the requirements of the STCW Convention (with the 2010 Manila Amendments), IMO recommendations (Model Courses 1.39 and 1.40), and contemporary research in maritime psychology.

The subject of study encompasses the principles, patterns, and methods of leadership and team interaction management in shipboard operations; the processes of formation, development, and functioning of ship crews as professional teams.

Course objectives

1. Develop understanding of the essence of leadership and its role in ensuring maritime safety
2. Familiarise students with key leadership theories and models applicable to the maritime industry
3. Develop skills in forming effective teams and managing group dynamics
4. Teach personnel motivation methods in conditions of extended voyages
5. Develop competencies in conflict management and negotiation
6. Develop decision-making skills under conditions of uncertainty and crisis situations
7. Familiarise students with the requirements of international conventions regarding human resource management onboard
8. Foster awareness of the leader’s ethical responsibility for the safety of the crew and vessel

Interdisciplinary connections (general, not tied to specific educational programme)

The course has interdisciplinary connections with:

- Psychology: fundamental knowledge of mental processes, personality, temperament, character, emotions; foundations of social psychology and group psychology

- Sociology: concepts of social groups, social roles, social interaction; foundations of organisational sociology
- Philosophy (Ethics): moral categories, ethical principles, concepts of responsibility, justice, and personal dignity
- Legal Studies: foundations of labour law, legal status of employee and employer, concept of legal liability
- Introduction to the Profession: general understanding of the maritime profession, crew structure, specifics of work onboard
- Foreign Language (English): basic level of English proficiency for mastering international maritime terminology

The educational component program consists of the following modules:

Module 1. Theoretical Foundations of Leadership and Team Building

Topic 1. Leadership in Maritime Transport: Essence, Functions and Significance for Maritime Safety

The concept of leadership and its distinction from formal management. The role of leadership in ensuring safety at sea. Requirements of the STCW Convention for leadership competencies. The human factor in maritime accidents. Characteristics of an effective maritime leader.

Topic 2. Leadership Theories and Models: From Classical Approaches to Contemporary Concepts

Evolution of leadership theories: trait theory, behavioural theories, situational models. Transformational and transactional leadership. Adaptive leadership in the maritime industry. The Tannenbaum-Schmidt model. Selection of leadership style depending on the situation onboard.

Topic 3. Authority and Responsibility of the Leader Onboard

Legal foundations of the authority of the master and officers. Delegation of authority and supervision of execution. The leader's responsibility for decisions and their consequences. Balance of power and trust. Leadership influence on subordinates: methods and limits. Accountability and transparency in team management.

Topic 4. The Ship's Team: Formation, Structure and Stages of Development

The concept of a team and its distinction from a group. Belbin's Team Role Model. Tuckman's stages of team development (Forming, Storming, Norming, Performing, Adjourning). Features of ship crew formation. The role of the master in shaping team culture. Factors of maritime team effectiveness.

Module 2. Managing Team Interaction in Maritime Work Conditions

Topic 5. Communication as a Leadership Tool: Effective Information Exchange Onboard

Communication barriers in the maritime environment. Standard Marine Communication Phrases (SMCP). The closed-loop communication model. Active listening and feedback. Briefings and debriefings. Communication in multinational crews.

Topic 6. Psychophysical Stress Factors Onboard and Their Impact on Crew Performance

Stress in the maritime profession: sources, manifestations, consequences. Monotony and hyperdynamia as fatigue factors. The impact of isolation on seafarers' mental state. Sleep and work schedules onboard: MLC and STCW requirements. Fatigue Risk Management. The leader's role in maintaining the crew's psychophysical health.

Topic 7. Personnel Motivation and Conflict Management in Maritime Work Conditions

Motivation theories and their application onboard. Features of motivation under conditions of prolonged isolation. The nature and types of conflicts in the shipboard environment. Thomas-Kilmann conflict

behaviour strategies. Constructive conflict management. Conflict prevention in the crew.

Topic 8. Decision-Making, Crisis Leadership and Ethics of Team Management

Decision-making models. Cognitive biases. Decision-making under stressful conditions. Crisis leadership and CRM (Crew Resource Management). Ethical foundations of maritime leadership. Responsibility for crew safety. Leader self-development.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test

Information resources

1. IMO – International Maritime Organization: <https://www.imo.org/>
2. The Nautical Institute: <https://www.nautinst.org/>
3. InterManager – International Ship Managers’ Association: <https://www.intermanager.org/>
4. SIRC – Seafarers International Research Centre: <https://www.sirc.cf.ac.uk/>
5. Maritime Professional Training: <https://www.mptusa.com/>
6. ISWAN – International Seafarers’ Welfare and Assistance Network:
<https://www.seafarerswelfare.org/>
7. Human Element Industry Guidelines: <https://www.imo.org/en/OurWork/HumanElement/>
8. MindTools – Leadership and Management: <https://www.mindtools.com/>
9. CHIRP Maritime – Confidential Hazardous Incident Reporting Programme:
<https://www.chirpmaritime.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating

- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Leadership and Teamwork: Model Course 1.39 / International Maritime Organization. – 2014 ed. – London : IMO, 2014. – 78 p.
2. Use of Leadership and Managerial Skills: Model Course 1.40 / International Maritime Organization. – 2018 ed. – London : IMO, 2018. – 92 p.
3. STCW including 2010 Manila Amendments: STCW Convention and STCW Code / International Maritime Organization. – 2017 ed. – London : IMO, 2017. – 418 p.
4. The Human Element: A Guide to Human Behaviour in the Shipping Industry / Maritime and Coastguard Agency. – London : TSO, 2010. – 88 p.
5. Northouse, P. G. Leadership: Theory and Practice / P. G. Northouse. – 9th ed. – Los Angeles : SAGE Publications, 2022. – 600 p.
6. Katzenbach, J. R. The Wisdom of Teams: Creating the High-Performance Organization / J. R. Katzenbach, D. K. Smith. – Boston : Harvard Business Review Press, 2015. – 304 p.

Supplementary Literature:

1. Belbin, R. M. Team Roles at Work / R. M. Belbin. – 2nd ed. – Oxford : Butterworth-Heinemann, 2010. – 160 p.
2. Tuckman, B. W. Developmental Sequence in Small Groups / B. W. Tuckman // Psychological Bulletin. – 1965. – Vol. 63(6). – P. 384–399.
3. Tuckman, B. W. Stages of Small Group Development Revisited / B. W. Tuckman, M. A. C. Jensen // Group and Organization Studies. – 1977. – Vol. 2(4). – P. 419–427.
4. Hofstede, G. Cultures and Organizations: Software of the Mind / G. Hofstede, G. J. Hofstede, M. Minkov. – 3rd ed. – New York : McGraw-Hill, 2010. – 576 p.

5. Flin, R. *Safety at the Sharp End: A Guide to Non-Technical Skills* / R. Flin, P. O'Connor, M. Crichton. – Farnham : Ashgate, 2008. – 317 p.
6. Hetherington, C. *Safety in Shipping: The Human Element* / C. Hetherington, R. Flin, K. Mearns // *Journal of Safety Research*. – 2006. – Vol. 37(4). – P. 401–411.
7. Bass, B. M. *The Bass Handbook of Leadership: Theory, Research, and Managerial Applications* / B. M. Bass, R. Bass. – 4th ed. – New York : Free Press, 2008. – 1536 p.
8. Goleman, D. *Primal Leadership: Unleashing the Power of Emotional Intelligence* / D. Goleman, R. Boyatzis, A. McKee. – Boston : Harvard Business Review Press, 2013. – 336 p.
9. Thomas, K. W. *Thomas-Kilmann Conflict Mode Instrument* / K. W. Thomas, R. H. Kilmann. – Mountain View : CPP, Inc., 2007. – 16 p.
10. Lencioni, P. *The Five Dysfunctions of a Team: A Leadership Fable* / P. Lencioni. – San Francisco : Jossey-Bass, 2002. – 240 p.
11. Kahneman, D. *Thinking, Fast and Slow* / D. Kahneman. – New York : Farrar, Straus and Giroux, 2011. – 512 p.
12. Reason, J. *Managing the Risks of Organizational Accidents* / J. Reason. – Farnham : Ashgate, 1997. – 252 p.
13. Helmreich, R. L. *On Error Management: Lessons from Aviation* / R. L. Helmreich // *British Medical Journal*. – 2000. – Vol. 320(7237). – P. 781–785.
14. Sampson, H. *International Seafarers and Transnationalism in the Twenty-First Century* / H. Sampson. – Manchester : Manchester University Press, 2013. – 224 p.
15. Progoulaki, M. *Dealing with Multicultural Human Resources in a Socially Responsible Manner: A Focus on the Maritime Industry* / M. Progoulaki, M. Roe // *WMU Journal of Maritime Affairs*. – 2011. – Vol. 10(1). – P. 7–23.
16. Oldenburg, M. *Occupational Risks and Challenges of Seafaring* / M. Oldenburg, X. Baur, C. Schlaich // *Journal of Occupational Health*. – 2010. – Vol. 52(5). – P. 249–256.
17. Barnett, M. *Barriers to Progress or Windows of Opportunity? A Study in Career Path Mapping in the Maritime Industries* / M. Barnett, D. Gatfield, C. Pekcan // *WMU Journal of Maritime Affairs*. – 2006. – Vol. 5(2). – P. 127–142.
18. *International Safety Management Code (ISM Code) and Guidelines on Implementation of the ISM Code* / International Maritime Organization. – 2018 ed. – London : IMO, 2018. – 44 p.
19. *Maritime Labour Convention, 2006, as amended (MLC, 2006)* / International Labour Organization. – Geneva : ILO, 2022. – 136 p.
20. Kouzes, J. M. *The Leadership Challenge: How to Make Extraordinary Things Happen in Organizations* / J. M. Kouzes, B. Z. Posner. – 7th ed. – Hoboken : Wiley, 2023. – 400 p.

Logic and Critical Thinking

National Transport
University

Logic and Critical Thinking

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Logic and Critical Thinking» is aimed at developing future maritime professionals' skills in rational thinking, information analysis, and making informed decisions under conditions of uncertainty and stress. The course provides mastery of logical laws, argumentation principles, methods for identifying errors in reasoning, and critical evaluation of information. Students develop the ability for systematic situation analysis, which is critically important for ensuring navigational safety, decision-making in extreme conditions, and effective communication in multinational crews. The course forms competencies for recognizing manipulations, verifying navigation system data, analyzing risks of maritime operations, and professionally resolving conflict situations on board vessels.

Subject of study of the educational component includes: fundamentals of formal and informal logic; laws and principles of logical thinking; structure and types of argumentation; logical operations with concepts and judgments; deductive and inductive inferences; critical thinking as a method of information analysis; cognitive biases and logical fallacies; techniques for information verification under information overload conditions; decision-making methods in critical situations; analysis of cause-and-effect relationships in maritime incidents; logic of professional communication and conflict resolution; critical evaluation of navigation instrument data and meteorological information.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Navigation and ship handling – for logical analysis of navigational data, route decision-making, and risk assessment
- Maritime safety – for critical threat analysis, situation assessment, and emergency response plan development
- Bridge Resource Management (BRM) – for rational task distribution, teamwork, and collective decision-making
- Meteorology – for critical evaluation of weather forecasts and meteorological data analysis
- Technical ship operation – for troubleshooting, technical problem analysis, and logical solution finding

- International maritime law – for interpretation of legal norms, position argumentation, and understanding of legal logic
- Psychology – for understanding cognitive processes, biases, and decision-making features under stressful conditions
- Communications – for constructing logical and persuasive messages in professional interaction
- Mathematics and statistics – for logical analysis of quantitative data and probability assessments
- Maritime accident investigation – for cause-and-effect analysis of incidents and establishing sequence of events.

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Logic and Critical Thinking for Maritime Professionals

Topic 1. Critical Thinking in the Maritime Profession

Critical thinking as the foundation of safe navigation. Logic and critical thinking in shipboard decision-making. Common logical errors in maritime practice: perception errors, hasty conclusions, data ignorance. Formal and informal logic in navigational situation analysis. Structure of critical thinking: problem identification, data collection, analysis, conclusion, action. Critical thinking vs. automatism of actions. Role of critical thinking in maritime accident prevention. Safety culture and questioning attitude.

Topic 2. Analysis of Problem Situations on Board

Problem identification in maritime operations. Separating symptoms from the actual problem. Fundamental laws of logical thinking in the context of navigation. Law of identity: precision of terminology in bridge team command. Law of non-contradiction: identifying conflicting navigational data. Law of excluded middle: decision-making in critical situations. Law of sufficient reason: justification of captain's decisions. Search for arguments for decision-making. Analysis of data from various sources: radar, AIS, ECDIS, visual observation. Assessment of information reliability.

Topic 3. Understanding and Interpreting Information in the Maritime Environment

Barriers to understanding in multicultural crews. Standard Marine Communication Phrases (SMCP) as a tool for precision. Clarification of terms and commands to prevent misunderstandings. Volume and content of maritime concepts: coastline, territorial waters, exclusive economic zone. Relationships between concepts in navigation. Interpretation of weather messages and NAVTEX. Value judgments vs. factual judgments in risk assessment. Conditions for accepting information: source verification, data currency verification. Critical evaluation of instrument and system readings.

Topic 4. Situation Assessment and Decision-Making

Methodology for navigational situation assessment. Proper questioning during watch handover. Types of questions: clarifying, control, problem-solving. Trap questions in stressful situations. Facts vs. assumptions in situation assessment. Statistical data: weather forecast analysis, accident statistics. Using COLREG rules as navigation axioms. Logical methods for establishing incident causes: method of similarity, difference, concomitant variations. Logic of inference in maritime operations. Strong arguments for justifying decisions about course changes, speed adjustments, seeking port of refuge.

Content Module 2. Argumentation, Teamwork, and Information Security

Topic 5. Criticism and Analysis of Shipboard Decisions

Constructive criticism as an element of safety culture. Algorithm for analyzing decisions made: debriefing after complex operations. Identifying logical errors in voyage planning. Near-miss situation analysis. Lessons from maritime accidents: Titanic, Costa Concordia, Ever Given. Role of human factor and logical errors. Bridge Resource Management (BRM): collective decision verification. Challenge and response procedure. Error elimination and procedure improvement.

Topic 6. Creative Thinking and Innovative Solutions in Maritime Operations

Balance between standard procedures and creativity. Creative solutions to non-standard problems: equipment malfunctions, extreme weather, medical emergencies. Brainstorming on the bridge: collective solution finding. Lateral thinking methods in emergency situations. Improvise, Adapt, Overcome in

maritime practice. Best practice analysis: how seafarers found non-standard solutions. Innovations in shipping: from traditions to new technologies. Critical thinking in implementing autonomous systems.

Topic 7. Logic of Argumentation and Professional Communication

Structure of maritime proof: thesis, arguments, demonstration. Justification of decisions to ship owner, port authorities, investigations. Deductive and inductive arguments in maritime practice. Logic of incident reports. Methods of refuting false accusations. Rules of effective argumentation in conflict situations. Errors in argumentation: ad hominem, false dilemma, hasty generalizations. Documenting decisions in ship's log. Logic of testimony in accident investigations. Protecting professional reputation through logical argumentation.

Topic 8. Information Security and Critical Media Perception in the Maritime Industry

Disinformation and propaganda about the maritime industry. Fake news about maritime incidents and their consequences. Critical perception of information from social networks. Verification of maritime information sources. Reliable resources: IMO, ICS, BIMCO, Maersk Training, Nautilus International. Cyber threats to ship systems: phishing, falsified navigational data. GPS spoofing and detection methods. Critical evaluation of electronic charts and updates. Working with official databases: ADMIRALTY, NAVAREA warnings. Seafarer's information hygiene: fact-checking before sharing. Countering manipulations in labor issues. Digital literacy for modern maritime professionals.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Internet Resource «Beyond the Pandemic» [Electronic resource]. – Access mode: <https://coronafakes.com/>
4. Creativity and Education: Why It Matters [Electronic resource]. – Access mode: <http://gohigher.org/creativity-and-education>

Maritime-specific resources:

1. International Maritime Organization (IMO) [Electronic resource]. – Режим доступу: <https://www.imo.org>
2. International Chamber of Shipping (ICS) [Electronic resource]. – Режим доступу: <https://www.ics-shipping.org>
3. BIMCO – Baltic and International Maritime Council [Electronic resource]. – Режим доступу: <https://www.bimco.org>
4. Nautilus International [Electronic resource]. – Режим доступу: <https://www.nautilusint.org>
5. Maritime Safety Committee (MSC) Circulars [Electronic resource]. – Режим доступу: <https://www.imo.org/en/OurWork/Safety/Pages/MscCirculars.aspx>
6. The Nautical Institute [Electronic resource]. – Режим доступу: <https://www.nautinst.org>
7. Safety4Sea – Maritime Safety News [Electronic resource]. – Режим доступу: <https://safety4sea.com>

8. MarineInsight – Merchant Navy Info [Electronic resource]. – Режим доступа: <https://www.marineinsight.com>

General academic resources:

1. Stanford Encyclopedia of Philosophy [Electronic resource]. – Режим доступа: <https://plato.stanford.edu>
2. Internet Encyclopedia of Philosophy [Electronic resource]. – Режим доступа: <https://iep.utm.edu>
3. Critical Thinking Web [Electronic resource]. – Режим доступа: <https://philosophy.hku.hk/think/>
4. The Foundation for Critical Thinking [Electronic resource]. – Режим доступа: <https://www.criticalthinking.org>
5. Media Bias/Fact Check [Electronic resource]. – Режим доступа: <https://mediabiasfactcheck.com>
6. Full Fact – UK's Independent Fact Checking Organization [Electronic resource]. – Режим доступа: <https://fullfact.org>

Educational Resources:

1. Coursera: Critical Thinking Skills for University Success [Electronic resource] / University of Sydney. – Режим доступа: <https://www.coursera.org/learn/critical-thinking-skills>
2. edX: Introduction to Logic and Critical Thinking [Electronic resource] / Duke University. – Режим доступа: <https://www.edx.org/learn/critical-thinking-skills>
3. FutureLearn: Logical and Critical Thinking [Electronic resource] / University of Auckland. – Режим доступа: <https://www.futurelearn.com/courses/logical-and-critical-thinking>
4. Coursera: Think Again: How to Reason and Argue [Electronic resource] / Duke University. – Режим доступа: <https://www.coursera.org/learn/critical-thinking-reason-argue>
5. Khan Academy: Logic and Proof [Electronic resource]. – Режим доступа: <https://www.khanacademy.org/math/geometry/hs-geo-transformations>

Video resources:

1. TED-Ed: Lessons Worth Sharing [Electronic resource]. – Режим доступа: <https://ed.ted.com/lessons?category=thinking>
2. CrashCourse Philosophy [Electronic resource] / YouTube. – Режим доступа: <https://www.youtube.com/playlist?list=PL8dPuuaLjXtNgK6MZucdYldNkMybYIHKR>
3. Wireless Philosophy (Wi-Phi) [Electronic resource]. – Режим доступа: <https://www.wi-phi.com>

Interactive tools:

1. Kialo – Platform for Thoughtful Discussion [Electronic resource]. – Режим доступа: <https://www.kialo.com>
2. Argument Mapping Software [Electronic resource]. – Режим доступа: <https://rationale.austhink.com>
3. Truth Tables Generator [Electronic resource]. – Режим доступа: <https://web.stanford.edu/class/cs103/tools/truth-table-tool/>

Maritime accident investigation databases:

1. Marine Accident Investigation Branch (MAIB) Reports [Electronic resource]. – Режим доступа: <https://www.gov.uk/maib-reports>
2. Transportation Safety Board of Canada – Marine Reports [Electronic resource]. – Режим доступа: <https://www.tsb.gc.ca/eng/rapports-reports/marine/index.html>
3. Australian Transport Safety Bureau – Marine Reports [Electronic resource]. – Режим доступа: <https://www.atsb.gov.au/publications/safety-investigations/?mode=Marine>
4. International Transport Workers' Federation (ITF) [Electronic resource]. – Режим доступа: <https://www.itfglobal.org/en/sector/seafarers>

Fact-checking and media literacy:

1. Snopes – Fact Checking [Electronic resource]. – Режим доступа: <https://www.snopes.com>
2. PolitiFact – Fact-checking U.S. Politics [Electronic resource]. – Режим доступа: <https://www.politifact.com>

3. International Fact-Checking Network (IFCN) [Electronic resource]. – Режим доступу: <https://www.poynter.org/ifcn/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2							
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

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Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

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Recommended literature

Basic Literature:

1. Fisher, A. Critical Thinking: An Introduction [Electronic resource] / A. Fisher. – 2nd ed. – Cambridge : Cambridge University Press, 2011. – 308 p.
2. Bowell, T. Critical Thinking: A Concise Guide [Electronic resource] / T. Bowell, G. Kemp. – 5th ed. – London : Routledge, 2020. – 340 p.
3. Browne, M. N. Asking the Right Questions: A Guide to Critical Thinking [Electronic resource] / M. N. Browne, S. M. Keeley. – 12th ed. – Pearson, 2018. – 240 p.

4. Paul, R. Critical Thinking: Tools for Taking Charge of Your Learning and Your Life [Electronic resource] / R. Paul, L. Elder. – 3rd ed. – Pearson, 2011. – 576 p.

Supplementary Literature:

1. Facione, P. A. Critical Thinking: What It Is and Why It Counts [Electronic resource] / P. A. Facione. – Insight Assessment, 2020. – 32 p. – Режим доступа: <https://www.insightassessment.com/article/critical-thinking-what-it-is-and-why-it-counts>
2. Halpern, D. F. Thought and Knowledge: An Introduction to Critical Thinking [Electronic resource] / D. F. Halpern. – 5th ed. – Psychology Press, 2014. – 628 p.
3. Kahneman, D. Thinking, Fast and Slow / D. Kahneman. – New York : Farrar, Straus and Giroux, 2011. – 499 p.
4. Ariely, D. Predictably Irrational: The Hidden Forces That Shape Our Decisions / D. Ariely. – New York : HarperCollins, 2008. – 384 p.
5. Taleb, N. N. The Black Swan: The Impact of the Highly Improbable / N. N. Taleb. – 2nd ed. – New York : Random House, 2010. – 444 p.

Maritime Industry Psychology

National Transport
University

Maritime Industry Psychology

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Olena Bairamova

Contact information

Email: bairamova3456@gmail.com

Phone: +38 (095) 801-16-36

**Address, classroom
number**

7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours

Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Maritime Industry Psychology» is aimed at developing future maritime professionals' psychological competencies necessary for effective professional activities in the specific conditions of the maritime environment. The course provides understanding of the psychological features of working in an isolated multinational crew, stress resilience mechanisms, conflict resolution, and leadership on vessels. Students master skills of psychological self-help, emotion management in extreme situations, effective intercultural communication, and maintaining mental health during long voyages. The course develops competencies for decision-making under uncertainty, burnout prevention, managing multinational crews, and ensuring psychological safety on board vessels in accordance with STCW and MLC 2006 requirements.

Subject of study of the educational component includes: psychological aspects of seafarers' professional activities; features of human psyche in maritime environment conditions; psychology of isolation, monotony, and sensory deprivation; stress management and seafarer's psychological resilience; interpersonal relationships in multinational crews; psychology of leadership and management on vessels; conflict resolution and mediation in confined collectives; psychological aspects of decision-making in critical situations; emotional intelligence and self-regulation; psychology of safety and human factor in maritime accidents; adaptation to shipboard life and readaptation ashore; prevention of professional burnout, depression, and suicidal behavior; psychological preparation for extreme situations; cultural sensitivity and cross-cultural communication.

Interdisciplinary connections.

The educational component integrates knowledge from:

- Maritime medicine – for understanding psychosomatic disorders and the interconnection of physical and mental health of seafarers
- Bridge Resource Management (BRM) – for applying psychological principles in teamwork and decision-making
- Maritime safety – for analyzing the human factor in marine incidents and error prevention

- Navigation and ship handling – for understanding psychological aspects of watch keeping and navigational decision-making
- International maritime law – for understanding MLC 2006 requirements regarding working conditions and psychological well-being
- Sociology – for analyzing group dynamics, crew social structure, and social processes on vessels
- Cultural studies and intercultural communication – for effective interaction in multicultural environments
- Pedagogy – for mentoring cadets and training junior crew members
- Ergonomics – for optimizing workplaces considering human psychophysiological characteristics
- Communications – for developing effective professional communication skills under stressful conditions

The educational component program consists of the following modules:

Content Module 1. Psychological Foundations of Maritime Activities

Topic 1. Introduction to Maritime Industry Psychology. Psychophysiological Features of the Maritime Profession

Maritime industry psychology as an applied branch of psychology. Specifics of the maritime profession: isolation, confined space, remoteness from shore, monotony, watch system. Psychophysiological requirements for seafarers. Professionally important qualities of maritime professionals: stress resistance, sociability, responsibility, adaptability. Impact of the marine environment on psyche: ship motion, time zone changes, circadian rhythms, weather dependence. Sensory deprivation and its consequences. «Maritime loneliness» syndrome. Psychological portrait of a modern seafarer. STCW requirements for psychological training of maritime professionals.

Topic 2. Psychology of Adaptation to Shipboard Life

Stages of seafarer adaptation: pre-voyage period, acute adaptation period, stabilization, pre-return. Physiological, psychological, and social adaptation. Features of adaptation during the first voyage. Culture shock and its overcoming. Adaptation to multinational crew. Age-related features of adaptation: young cadets vs. experienced seafarers. Gender aspects of female seafarers' adaptation. Strategies for successful adaptation. Role of mentorship in adapting newcomers. Readaptation to shore life after voyage. «Shore sickness» syndrome. Family support during adaptation periods. Psychological preparation for voyage.

Topic 3. Stress Management and Seafarer's Psychological Resilience

Nature of stress in the maritime profession. Types of professional stressors: operational, organizational, interpersonal, environmental. Acute and chronic stress. Phases of stress reaction according to H. Selye. Physiological and psychological manifestations of stress. Positive stress (eustress) vs. negative stress (distress). Psychological resilience and its components: emotional stability, cognitive flexibility, behavioral self-regulation. Coping strategies: problem-focused, emotion-focused, avoidance. Stress management techniques: breathing exercises, progressive muscle relaxation, visualization, mindfulness. Seafarer's mental hygiene. Distress prevention. Post-traumatic stress disorder (PTSD) in seafarers after accidents or pirate attacks.

Topic 4. Emotional Intelligence and Self-Regulation in Maritime Conditions

Concept of emotional intelligence according to D. Goleman. Components of emotional intelligence: self-awareness, self-control, social awareness, relationship management. Role of emotional intelligence in the maritime profession. Recognition and management of own emotions. Emotional self-regulation during watch and in extreme situations. Understanding emotions of other crew members. Empathy in seafarer's professional activities. Managing anger, anxiety, frustration. Emotional support for colleagues. Psychological defense mechanisms and their role. Development of emotional intelligence: practical techniques. Emotional burnout and its prevention. Balance of emotional investment and self-preservation.

Content Module 2. Socio-Psychological Aspects of Work on Vessels

Topic 5. Psychology of Interpersonal Relations and Conflict Resolution on Vessels

Socio-psychological structure of crew. Formal and informal groups on vessels. Group dynamics in isolated collectives. Stages of group development according to B. Tuckman: forming, storming, norming,

performing. Psychological climate on vessel and factors of its formation. Interpersonal relations: sympathy, antipathy, indifference. Nature of conflicts in confined space. Types of conflicts: interpersonal, intergroup, vertical, horizontal. Causes of conflicts: resource-based, value-based, communicative, personal. Conflict behavior styles according to K. Thomas: competition, collaboration, compromise, avoidance, accommodation. Techniques for constructive conflict resolution. Mediation on vessels. Bullying and harassment: recognition and counteraction. Crew psychological safety.

Topic 6. Cross-Cultural Psychology and Communication in Multinational Crews

Cultural differences and their psychological foundations. G. Hofstede's theory of cultural dimensions: power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance, long-term orientation. Cultural context of communication: high-context and low-context cultures. Nonverbal communication in different cultures. Stereotypes and prejudices: formation mechanisms and overcoming. Cultural sensitivity and cultural intelligence. Barriers to intercultural communication. Language barrier and its psychological consequences. Standard Marine Communication Phrases (SMCP) as a tool for overcoming barriers. Tolerance and respect for cultural diversity. Religious and ethical differences on vessels. Common values of the maritime community.

Topic 7. Psychology of Leadership and Management on Vessels

Psychology of power and authority on vessels. Leadership theories: trait, behavioral, situational, transformational. Leadership styles: authoritarian, democratic, liberal. Situational leadership according to P. Hersey and K. Blanchard. Transformational vs. transactional leadership. Captain as psychological leader of crew. Psychological aspects of managerial decision-making. Bridge Resource Management (BRM): psychological foundations. Delegation of authority and trust. Crew motivation during long voyages. Feedback and constructive criticism. Officer's authority: sources and maintenance. Psychology of mentoring and training on vessels. Leadership vs. management. Development of leadership competencies.

Topic 8. Seafarers' Mental Health and Prevention of Mental Disorders

Concept of mental health and well-being. Specific risks to seafarers' mental health: depression, anxiety disorders, addictions, suicidal behavior. Statistics of mental disorders in maritime industry. Risk factors: prolonged separation from family, loneliness, alcohol, psychoactive substances. Professional burnout: symptoms, stages, prevention. Recognition of signs of psychological distress in colleagues. Psychological mutual assistance on vessels. MLC 2006 requirements for psychological support of seafarers. Access to psychological help during voyage: telemedicine, hotlines. Crisis intervention during emergencies. Psychological rehabilitation after traumatic events. Seafarer's work-life balance. Family support as a factor of mental health. Stigma regarding mental problems and its overcoming. Culture of psychological safety in maritime industry.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

Mental Health and Well-being:

1. International Seafarers' Welfare and Assistance Network (ISWAN) [Electronic resource]. – Режим доступа: <https://www.seafarerswelfare.org>
2. SeafarerHelp – 24/7 Helpline for Seafarers [Electronic resource]. – Режим доступа: <https://www.seafarerhelp.org>
3. International Committee on Seafarers' Welfare (ICSW) [Electronic resource]. – Режим доступа: <https://www.seafarerswelfare.org/our-work/international-committee-on-seafarers-welfare>

4. Sailors' Society – Supporting Seafarers Worldwide [Electronic resource]. – Режим доступа: <https://www.sailors-society.org>
5. Mission to Seafarers [Electronic resource]. – Режим доступа: <https://www.missiontoseafarers.org>
6. Apostleship of the Sea (Stella Maris) [Electronic resource]. – Режим доступа: <https://www.stellamaris.org.uk>
7. Human Rights at Sea – Seafarers' Mental Health [Electronic resource]. – Режим доступа: <https://www.humanrightsatsea.org>

Maritime Psychology Research:

1. International Maritime Health Journal [Electronic resource]. – Режим доступа: https://journals.viamedica.pl/international_maritime_health
2. WMU Journal of Maritime Affairs [Electronic resource]. – Режим доступа: <https://link.springer.com/journal/13437>
3. Maritime Policy & Management Journal [Electronic resource]. – Режим доступа: <https://www.tandfonline.com/toc/tmpm20/current>
4. Journal of Occupational Health Psychology [Electronic resource]. – Режим доступа: <https://www.apa.org/pubs/journals/ocp>
5. Safety Science Journal [Electronic resource]. – Режим доступа: <https://www.sciencedirect.com/journal/safety-science>

International Organizations and Conventions:

1. International Labour Organization (ILO) – Maritime Labour Convention 2006 [Electronic resource]. – Режим доступа: <https://www.ilo.org/global/standards/maritime-labour-convention/lang--en/index.htm>
2. International Maritime Organization (IMO) – Human Element [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/Default.aspx>
3. World Health Organization (WHO) – Mental Health [Electronic resource]. – Режим доступа: <https://www.who.int/health-topics/mental-health>
4. International Transport Workers' Federation (ITF) – Seafarers [Electronic resource]. – Режим доступа: <https://www.itfglobal.org/en/sector/seafarers>

Bridge Resource Management and Human Factors:

1. The Nautical Institute – Human Element Resources [Electronic resource]. – Режим доступа: <https://www.nautinst.org/resources/human-element.html>
2. CHIRP Maritime – Confidential Incident Reporting [Electronic resource]. – Режим доступа: <https://chirpmaritime.org>
3. UK Marine Accident Investigation Branch (MAIB) [Electronic resource]. – Режим доступа: <https://www.gov.uk/maib-reports>
4. Transportation Safety Board of Canada – Marine [Electronic resource]. – Режим доступа: <https://www.tsb.gc.ca/eng/rapports-reports/marine/index.html>

Cross-Cultural Communication:

1. Hofstede Insights – Country Comparison Tool [Electronic resource]. – Режим доступа: <https://www.hofstede-insights.com/country-comparison/>
2. International Association of Maritime Universities (IAMU) [Electronic resource]. – Режим доступа: <https://iamu-edu.org>
3. World Maritime University (WMU) [Electronic resource]. – Режим доступа: <https://www.wmu.se>

Stress Management and Resilience:

1. American Psychological Association (APA) – Stress Resources [Electronic resource]. – Режим доступа: <https://www.apa.org/topics/stress>
2. Mind – Mental Health Charity [Electronic resource]. – Режим доступа: <https://www.mind.org.uk>
3. Mental Health Foundation [Electronic resource]. – Режим доступа: <https://www.mentalhealth.org.uk>
4. Headspace – Meditation and Mindfulness App [Electronic resource]. – Режим доступа: <https://www.headspace.com>
5. Calm – Meditation and Sleep App [Electronic resource]. – Режим доступа: <https://www.calm.com>

Maritime Training and Education:

1. STCW Convention – Standards of Training, Certification and Watchkeeping [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/STCW-Conv-LINK.aspx>
2. BIMCO – Training and Human Resources [Electronic resource]. – Режим доступа: <https://www.bimco.org/ships-ports-and-voyage-planning/crew-support>
3. Nautilus International – Professional Development [Electronic resource]. – Режим доступа: <https://www.nautilusint.org>
4. International Chamber of Shipping (ICS) – Manning and Training [Electronic resource]. – Режим доступа: <https://www.ics-shipping.org/shipping-fact/manning-and-training/>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: The Science of Well-Being [Electronic resource] / Yale University. – Режим доступа: <https://www.coursera.org/learn/the-science-of-well-being>
2. Coursera: Managing Emotions in Times of Uncertainty & Stress [Electronic resource] / Yale University. – Режим доступа: <https://www.coursera.org/learn/manage-emotions-uncertainty-stress>
3. edX: Leadership and Emotional Intelligence [Electronic resource] / Indian Institute of Management Bangalore. – Режим доступа: <https://www.edx.org/learn/leadership>
4. FutureLearn: Mindfulness for Wellbeing and Peak Performance [Electronic resource] / Monash University. – Режим доступа: <https://www.futurelearn.com/courses/mindfulness-wellbeing-performance>
5. Coursera: Intercultural Communication and Conflict Resolution [Electronic resource] / University of California, Irvine. – Режим доступа: <https://www.coursera.org/learn/intercultural-communication>
6. edX: Cross-Cultural Communication [Electronic resource] / Hong Kong Polytechnic University. – Режим доступа: <https://www.edx.org/learn/communication>
7. Coursera: Inspiring Leadership through Emotional Intelligence [Electronic resource] / Case Western Reserve University. – Режим доступа: <https://www.coursera.org/learn/emotional-intelligence-leadership>
8. FutureLearn: Understanding Anxiety, Depression and CBT [Electronic resource] / University of Reading. – Режим доступа: <https://www.futurelearn.com/courses/anxiety-depression-and-cbt>
9. World Maritime University – Mental Health Awareness for Seafarers [Electronic resource]. – Режим доступа: <https://www.wmu.se/education/online-education>

Video Resources:

1. TED Talks: Mental Health [Electronic resource]. – Режим доступа: <https://www.ted.com/topics/mental+health>
2. TED Talks: Emotional Intelligence [Electronic resource]. – Режим доступа: <https://www.ted.com/topics/emotional+intelligence>
3. Yale University – Science of Well-Being Videos [Electronic resource] / YouTube. – Режим доступа: <https://www.youtube.com/playlist?list=PLU14u3cNGP63C7vvr5DYU-mTVzj-EQbTN>
4. Stanford University – Stress Management Lectures [Electronic resource]. – Режим доступа: <https://www.youtube.com/stanford>
5. The School of Life – Emotional Intelligence [Electronic resource] / YouTube. – Режим доступа: <https://www.youtube.com/c/theschooloflifetv>

Podcasts:

1. The Psychology Podcast with Dr. Scott Barry Kaufman [Electronic resource]. – Режим доступа: <https://scottbarrykaufman.com/podcast/>
2. The Happiness Lab with Dr. Laurie Santos [Electronic resource]. – Режим доступа: <https://www.pushkin.fm/podcasts/the-happiness-lab-with-dr-laurie-santos>
3. WorkLife with Adam Grant [Electronic resource]. – Режим доступа: <https://www.ted.com/podcasts/worklife>

4. Hidden Brain – NPR [Electronic resource]. – Режим доступа: <https://www.npr.org/podcasts/510308/hidden-brain>

Interactive Tools and Apps:

1. Moodfit – Mental Health Fitness App [Electronic resource]. – Режим доступа: <https://www.getmoodfit.com>
2. Sanvello – Anxiety & Depression App [Electronic resource]. – Режим доступа: <https://www.sanvello.com>
3. BetterHelp – Online Therapy Platform [Electronic resource]. – Режим доступа: <https://www.betterhelp.com>
4. Talkspace – Online Therapy [Electronic resource]. – Режим доступа: <https://www.talkspace.com>
5. 7 Cups – Free Emotional Support [Electronic resource]. – Режим доступа: <https://www.7cups.com>

Research Databases:

1. PubMed – Maritime Health Research [Electronic resource]. – Режим доступа: <https://pubmed.ncbi.nlm.nih.gov>
2. PsycINFO – Psychological Research Database [Electronic resource]. – Режим доступа: <https://www.apa.org/pubs/databases/psycinfo>
3. Google Scholar – Academic Research [Electronic resource]. – Режим доступа: <https://scholar.google.com>
4. ResearchGate – Scientific Network [Electronic resource]. – Режим доступа: <https://www.researchgate.net>

Guidelines and Reports:

1. IMO Guidelines on Fatigue [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/HumanElement/Pages/Fatigue.aspx>
2. ILO Guidelines on Occupational Safety and Health in the Maritime Industry [Electronic resource]. – Режим доступа: <https://www.ilo.org/global/industries-and-sectors/shipping-ports-fisheries-inland-waterways/lang--en/index.htm>
3. WHO Guidelines on Mental Health at Work [Electronic resource]. – Режим доступа: <https://www.who.int/publications/i/item/9789240053052>
4. ISWAN Good Mental Health Guide for Seafarers [Electronic resource]. – Режим доступа: <https://www.seafarerswelfare.org/good-mental-health-guides>
5. Seafarer Mental Health Toolkit [Electronic resource]. – Режим доступа: <https://www.humanrightsatsea.org/seafarers-mental-health/>

Books and Self-Help Resources:

1. American Psychological Association – Help Center [Electronic resource]. – Режим доступа: <https://www.apa.org/topics>
2. Greater Good Science Center – UC Berkeley [Electronic resource]. – Режим доступа: <https://greatergood.berkeley.edu>
3. Positive Psychology Center – University of Pennsylvania [Electronic resource]. – Режим доступа: <https://ppc.sas.upenn.edu>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating

- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Olde nburg, M. Seafarer's Fatigue: A Review of Risk Factors, Consequences for Seafarers' Health and Safety and Options for Mitigation [Electronic resource] / M. Oldenburg, H. J. Jensen, U. Latza, X. Baur // International Maritime Health. – 2013. – Vol. 64(3). – P. 136–155. – Режим доступу: https://journals.viamedica.pl/international_maritime_health
2. Sampson, H. International Seafarers and Transnationalism in the Twenty-First Century [Electronic resource] / H. Sampson. – Manchester : Manchester University Press, 2013. – 224 p.
3. MacLachlan, M. Maritime Psychology: Research in Organizational & Health Behavior at Sea [Electronic resource] / M. MacLachlan. – Cham : Springer, 2017. – 318 p.
4. Progoulaki, M. Managing Multicultural Human Resources: A Challenge for Ship Management [Electronic resource] / M. Progoulaki, M. Roe // WMU Journal of Maritime Affairs. – 2011. – Vol. 10(2). – P. 149–168.
5. Carotenuto, A. Psychological Stress in Seafarers: A Review [Electronic resource] / A. Carotenuto, I. Molino, A. Fasanaro, F. Amenta // International Maritime Health. – 2012. – Vol. 63(4). – P. 188–194.
6. Bridger, R. S. Occupational Stress and Job Satisfaction in Merchant Seafarers [Electronic resource] / R. S. Bridger, A. Day, K. Morton // International Journal of Industrial Ergonomics. – 2013. – Vol. 43(2). – P. 172–178.

Supplementary Literature:

1. Goleman, D. Emotional Intelligence: Why It Can Matter More Than IQ / D. Goleman. – New York : Bantam Books, 1995. – 352 p.
2. Kahneman, D. Thinking, Fast and Slow / D. Kahneman. – New York : Farrar, Straus and Giroux, 2011. – 499 p.

3. Hofstede, G. Cultures and Organizations: Software of the Mind [Electronic resource] / G. Hofstede, G. J. Hofstede, M. Minkov. – 3rd ed. – New York : McGraw-Hill, 2010. – 576 p.
4. Flin, R. Safety at the Sharp End: A Guide to Non-Technical Skills [Electronic resource] / R. Flin, P. O'Connor, M. Crichton. – Farnham : Ashgate, 2008. – 326 p.
5. Hetherington, C. Safety in Shipping: The Human Element [Electronic resource] / C. Hetherington, R. Flin, K. Mearns // Journal of Safety Research. – 2006. – Vol. 37(4). – P. 401–411.
6. Jensen, O. C. Maritime Safety and Health: A Guide to Seafarers' Health Protection [Electronic resource] / O. C. Jensen. – Copenhagen : Nordic Council of Ministers, 2015. – 156 p.

Mindfulness Practice for Seafarers

National Transport
University

Mindfulness Practice for Seafarers

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

“Mindfulness Practice for Seafarers” is a practice-oriented educational component that fosters the development of knowledge, skills, and practical abilities in applying mindfulness techniques during the performance of professional duties. The educational component aims to develop competencies in meditation techniques and breathing exercises to enhance concentration and situational awareness on watch; stress management methods during extended voyages and psycho-emotional self-regulation in extreme conditions; practices to improve sleep quality and rest onboard; techniques for rapid restoration of a resourceful state following demanding operations; development of emotional resilience and psychological endurance in conditions of isolation; practices for overcoming negative thoughts, anxiety, and professional burnout; methods for maintaining mental health during prolonged separation from family; and interpersonal mindfulness for improving communication and collaboration within multicultural crews.

The subject of study encompasses:

- mindfulness techniques that promote muscle relaxation and pain reduction following physical exertion onboard; enhance work and learning efficiency through improved concentration; develop empathy and compassion towards crew members; strengthen the body’s resistance to viral infections in the confined space of a vessel; slow brain cell ageing and contribute to the prevention of age-related diseases;
- neuropsychological mechanisms that improve memory and the ability to retain complex safety procedures; enhance the capacity for concentration on critically important tasks during watch; develop situational awareness skills for timely hazard identification;
- practical skills in applying breathing techniques for rapid stress reduction in critical situations; performing body scan and progressive muscle relaxation for recovery after watch; using the STOP technique for emotional regulation in conflict situations; mindful communication practices for effective interaction within multicultural teams;
- mindfulness practices that help maintain clarity of thought and make balanced decisions under stress; support one’s own mental health and psychological resilience during extended voyages; prevent professional burnout through regular mindfulness practice.

Interdisciplinary connections.

(general, not tied to specific educational programme)

The course has interdisciplinary connections with:

- humanities: philosophy, ethics, psychology – for understanding the theoretical foundations of mindfulness and its application in professional contexts;
- social sciences: sociology, social psychology – for studying group dynamics and interpersonal interaction in multicultural crews;
- management sciences: leadership, organisational behaviour, human resource management – for developing skills in team management and creating a supportive work environment;
- medical sciences: occupational health, psychophysiology, neuroscience – for understanding the physiological and neurological effects of mindfulness practice on stress reduction and cognitive function.

The educational component program consists of the following modules:

Module 1. Foundations of Mindfulness and Self-Regulation

Topic 1. Fundamentals of Mindfulness and Its Application in the Maritime Profession

Mindfulness (awareness) as the practice of conscious attention to the present moment without judgement or automatic reaction. Mindfulness as a method for maintaining clarity of thought on watch, improving concentration during complex operations, and reducing the risk of errors due to fatigue or distraction. The practice of mindfulness as prevention of professional burnout, improvement of sleep quality, reduction of anxiety levels, and a means of adaptation to the challenging conditions of life at sea.

Topic 2. Physiological and Neuropsychological Foundations of Mindfulness Practice

Mindfulness practice as a means of emotional regulation and impulse control – neuroimaging research. Mindfulness as a means of activating the parasympathetic nervous system and improving brain neuroplasticity – the ability to form new neural connections, enabling more effective adaptation to changing conditions at sea. Mindfulness as a practical tool for influencing physiology and psychological state.

Topic 3. Attention Training Techniques and Situational Awareness

Concentration of attention as a critically important skill for seafarers. Attention training techniques: focusing on breathing, body scanning, mindful listening, and observing internal states without judgement. Situational awareness as the ability to perceive, understand, and anticipate events in one's surroundings. The "expanded field of attention" technique. Developing attention training through mindfulness practices and the skill of returning a wandering mind to the "here and now" in the monotonous conditions of extended voyages.

Topic 4. Emotional Regulation and Stress Management in Maritime Conditions

Emotional regulation in the maritime profession. The "RAIN" technique (Recognise-Allow-Investigate-Non-identification): recognising an emotion, allowing it to be present, investigating it in the body. The pause between stimulus and response. The concept of the "window of tolerance" and using techniques to return to balance. The practice of self-compassion. Emotional resilience as the ability to maintain inner equilibrium even in the most challenging circumstances.

Module 2. Practical Integration of Mindfulness into Professional Activity

Topic 5. Breathing Practices and Relaxation Techniques Onboard

Mindful breathing as the most effective technique for rapid stress reduction in the confined space of a vessel. Diaphragmatic breathing. The "4-7-8" technique. Box breathing (square breathing) as a practice for relieving acute stress in critical situations. The extended exhalation technique. Jacobson's progressive muscle relaxation.

Topic 6. Mindful Communication and Leadership in Multicultural Crews

Effective communication onboard as a matter of safety in multicultural crews. Mindfulness as presence during conversation without distraction by one's own thoughts or preparation of a response. The practice of active listening through mindfulness in conditions where English is a second language. The "STOP" technique (Stop-Take a breath-Observe-Proceed) as a means of preventing impulsive reactions in conflict situations. Mindful leadership. Mindfulness practice as a conscious approach to transforming challenges into opportunities for dialogue and mutual understanding.

Topic 7. Practical Application of Mindfulness in Extreme Maritime Situations

Mindfulness in crisis as acute presence and focus on action. The grounding technique. "Fight or flight" response and mindful breathing. The practice of "divided attention" and inner calm. Processing traumatic experience through mindful experiencing of emotions; prevention of post-traumatic stress disorder (PTSD). Developing "muscle memory" of consciousness. Mindfulness practice in crisis – the ability to act quickly, precisely, and without panic.

Topic 8. Integration of Mindfulness Practice into the Seafarer's Professional Life

Integration of mindfulness into the seafarer's professional activities. Mindful watch-keeping with attention to every detail: engine sounds, instrument readings, weather changes, vessel behaviour. Creating a personal mindfulness practice. Keeping an awareness journal, identifying stress patterns, and recognising triggers for emotional reactions. Mindfulness in routine activities – mindful eating, mindful showering, mindful walking on deck – transforming ordinary moments into opportunities for presence practice. Creating "mindful spaces" onboard – a quiet corner where one can pause for a few minutes – helping the crew maintain mental health. Collective mindfulness practice in the team (shared breathing exercises before complex operations, brief mindfulness pauses at the start of a shift) fostering a culture of awareness onboard. Integrating mindfulness into the seafarer's professional life is not an additional burden but a way to make hard work easier, dangerous work safer, and solitude less oppressive.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Information resources

1. ISWAN – International Seafarers' Welfare and Assistance Network: <https://www.seafarerswelfare.org/>
2. ITF Seafarers' Trust: <https://www.seafarerstrust.org/>
3. The Mission to Seafarers: <https://www.missiontoseafarers.org/>
4. Sailors' Society: <https://www.sailors-society.org/>
5. SeafarerHelp (24/7 helpline): <https://www.seafarerhelp.org/>
6. Mindful.org: <https://www.mindful.org/>
7. Center for Mindfulness (UMass Medical School): <https://www.umassmed.edu/cfm/>
8. Headspace for Work: <https://www.headspace.com/work>
9. IMO – Mental Health Resources: <https://www.imo.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points	
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Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
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For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

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regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

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Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Kabat-Zinn, J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness / J. Kabat-Zinn. – Revised and updated ed. – New York : Bantam Books, 2013. – 720 p.
2. Kabat-Zinn, J. Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life / J. Kabat-Zinn. – 10th anniversary ed. – New York : Hachette Books, 2005. – 304 p.
3. Williams, M. Mindfulness: A Practical Guide to Finding Peace in a Frantic World / M. Williams, D. Penman ; foreword by J. Kabat-Zinn. – London : Piatkus, 2011. – 288 p.
4. Blackburn, P. Mentally Healthy Ships: A Guide to Policy and Practice for Mental Health on Board Vessels / P. Blackburn. – London : ISWAN, 2020. – 48 p. URL: <https://www.seafarerswelfare.org/>
5. Stahl, B. A Mindfulness-Based Stress Reduction Workbook / B. Stahl, E. Goldstein ; foreword by J. Kabat-Zinn. – 2nd ed. – Oakland : New Harbinger Publications, 2019. – 232 p.

6. Lehrhaupt, L. Mindfulness-Based Stress Reduction: The MBSR Program for Enhancing Health and Vitality / L. Lehrhaupt, P. Meibert. – Novato : New World Library, 2017. – 256 p.

Supplementary Literature:

1. Carter, T. Occupational Health and Safety in the Maritime Sector / T. Carter // *International Maritime Health*. – 2017. – Vol. 68(1). – P. 1–2.
2. Carotenuto, A. Psychological Stress in Seafarers: A Review / A. Carotenuto, I. Molino, A. M. Fasanaro, F. Amenta // *International Maritime Health*. – 2012. – Vol. 63(4). – P. 188–194.
3. Lefkowitz, R. Y. Seafarer Mental Health Study / R. Y. Lefkowitz, M. D. Slade. – New Haven : Yale Occupational and Environmental Medicine Program, 2019. – 42 p.
4. Sampson, H. Seafarers' Mental Health and Wellbeing / H. Sampson, N. Ellis. – Cardiff : Seafarers International Research Centre, Cardiff University, 2019. – 85 p. URL: <https://orca.cardiff.ac.uk/>
5. McVeigh, J. Mental Health and Psychological Wellbeing of Maritime Personnel: A Systematic Review / J. McVeigh, M. MacLachlan, R. Stilz [et al.] // *BMC Psychology*. – 2022. – Vol. 10. – Article 139.
6. Jonglertmontree, W. Mental Health Problems and Their Related Factors among Seafarers: A Scoping Review / W. Jonglertmontree, O. Kaewboonchoo, I. Morioka, P. Boonyamalik // *BMC Public Health*. – 2022. – Vol. 22. – Article 282.
7. Oldenburg, M. Occupational Risks and Challenges of Seafaring / M. Oldenburg, X. Baur, C. Schlaich // *Journal of Occupational Health*. – 2010. – Vol. 52(5). – P. 249–256.
8. Jensen, H.-J. Potentially Traumatic Experiences of Seafarers / H.-J. Jensen, M. Oldenburg // *Journal of Occupational Medicine and Toxicology*. – 2019. – Vol. 14. – Article 17.
9. Kabat-Zinn, J. Mindfulness-Based Interventions in Context: Past, Present, and Future / J. Kabat-Zinn // *Clinical Psychology: Science and Practice*. – 2003. – Vol. 10(2). – P. 144–156.
10. Khoury, B. Mindfulness-Based Stress Reduction for Healthy Individuals: A Meta-Analysis / B. Khoury, M. Sharma, S. E. Rush, C. Fournier // *Journal of Psychosomatic Research*. – 2015. – Vol. 78(6). – P. 519–528.
11. Creswell, J. D. Mindfulness Interventions / J. D. Creswell // *Annual Review of Psychology*. – 2017. – Vol. 68. – P. 491–516.
12. Good Mental Health Guides for Seafarers / ISWAN. – London : ISWAN, 2020. URL: <https://www.seafarerswelfare.org/resources>
13. Psychological Wellbeing at Sea: A Good Mental Health Guide for Seafarers / P. Blackburn. – London : ISWAN, 2019. – 24 p.
14. Goleman, D. Focus: The Hidden Driver of Excellence / D. Goleman. – New York : Harper, 2013. – 320 p.
15. Neff, K. Self-Compassion: The Proven Power of Being Kind to Yourself / K. Neff. – New York : William Morrow, 2011. – 320 p.
16. Van der Kolk, B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma / B. Van der Kolk. – New York : Penguin Books, 2015. – 464 p.
17. Siegel, D. J. The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being / D. J. Siegel. – New York : W. W. Norton, 2007. – 387 p.
18. Hanson, R. Hardwiring Happiness: The New Brain Science of Contentment, Calm, and Confidence / R. Hanson. – New York : Harmony Books, 2013. – 304 p.
19. Germer, C. K. The Mindful Path to Self-Compassion: Freeing Yourself from Destructive Thoughts and Emotions / C. K. Germer. – New York : Guilford Press, 2009. – 306 p.
20. Harris, R. The Happiness Trap: How to Stop Struggling and Start Living / R. Harris. – Boston : Trumpeter, 2008. – 240 p.

Political Science and International Security

National Transport
University

Political Science and International Security

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component “Political Science and International Security” is part of the social and humanities training cycle for specialists in maritime and inland waterway transport. The course aims to develop a systematic understanding of political processes, international relations, and security issues in the context of seafarers’ professional activities.

The relevance of the course is determined by the global nature of the maritime industry and the need to understand political factors affecting working conditions, navigation safety, and the functioning of maritime trade. Contemporary challenges – armed conflicts, piracy, terrorism, geopolitical rivalry between major powers – directly concern the professional activities of seafarers and require appropriate knowledge for risk assessment and informed decision-making.

The course covers theoretical foundations of political science and international relations theory, concepts of international and maritime security, activities of international organisations, the nature of conflicts and mechanisms for their resolution, and geopolitical processes in the maritime dimension. Particular attention is given to Ukraine’s situation as a maritime state under conditions of Russian aggression, navigation safety issues in the Black Sea and other regions.

The course integrates theoretical knowledge with practical experience from the maritime industry. It examines the activities of the International Maritime Organization (IMO), ISPS Code requirements, Best Management Practices (BMP) for security, protection of seafarers’ rights through MLC 2006 and ITF activities. This approach ensures the relevance of educational material for students’ future professional activities.

Upon completing the course, students acquire competencies in analysing political processes and international relations, assessing security risks in various world regions, understanding legal and institutional mechanisms for ensuring maritime security, and awareness of Ukraine’s place in the international security system and the significance of maritime potential for national interests.

The subject of study encompasses the patterns of functioning of society’s political sphere, the system of international relations and international security in their interconnection with the maritime industry.

Object of Study

The object of study is politics as a sphere of social life, international relations as a system of interaction between subjects of world politics, and international and maritime security as a state of protection from threats.

Subject of Study includes:

- theoretical and methodological foundations of political science as a discipline, its subject, methods, functions, and place in the system of social sciences;
- concepts and approaches to studying international security: realism, liberalism, constructivism, the Copenhagen School;
- the state as the primary subject of international relations, concepts of sovereignty, national interests, and foreign policy instruments;
- international organisations and their role in the international security system: UN, NATO, regional structures, maritime organisations (IMO, ILO, ITF);
- the nature of international conflicts and wars, their causes, typology, methods of resolution, and impact on the maritime industry;
- maritime security as a specific sphere of international security: threats (piracy, terrorism, smuggling), countermeasures (ISPS Code, BMP), international cooperation;
- Ukraine’s place in the international security system, threats to national security, Euro-Atlantic integration, the maritime dimension of Ukraine’s security;
- geopolitics as a direction of political thought, classical concepts (heartland, rimland, sea power), contemporary geopolitical challenges in the maritime dimension.

Key Course Categories:

- politics, power, state, sovereignty, national interests;
- international relations, international system, international order;
- international security, national security, collective security, human security;
- maritime security, safety of navigation (maritime safety);
- conflict, war, hybrid warfare, security dilemma;
- geopolitics, thalassocracy, tellurocracy, sea power.

Interdisciplinary connections (general, not tied to specific educational programme)

The course “Political Science and International Security” has a pronounced interdisciplinary character, integrating knowledge from various fields of social, humanitarian, and specialised sciences. Interdisciplinary connections ensure a comprehensive understanding of political processes and security issues in the context of the maritime industry.

Connection with Philosophy

Philosophy provides a worldview and methodological foundation for understanding political phenomena. Political philosophy as a branch of philosophy and component of political science investigates fundamental questions: the nature of power and the state, justice, freedom, human rights. The categorical apparatus of philosophy (being, consciousness, cognition, values) is used for analysing political reality. Ethical concepts form the basis for evaluating political decisions and actions.

Connection with History

History provides empirical material for political science generalisations. The history of international relations, diplomatic history, and military history are sources of knowledge about the evolution of political institutions, conflicts, and alliances. The history of Ukraine, particularly the struggle for independence and statehood, provides context for understanding contemporary security challenges. Maritime history reveals the role of sea power in world politics.

Connection with Legal Studies

Law is one of the means of regulating political relations and ensuring security. Constitutional law determines the foundations of a state’s political system. Public international law regulates relations between states, activities of international organisations, and the use of force. International maritime law (UNCLOS) establishes regimes for maritime spaces and state rights. International humanitarian law regulates the conduct of military operations and protection of civilians.

Connection with Sociology

Sociology studies society as a holistic system and individual social phenomena. Political sociology examines the social foundations of politics: the influence of social structure on political processes, the role of social groups and movements. Sociological methods (surveys, questionnaires, content analysis) are widely used in political science research. Sociology of labour provides the foundation for understanding seafarers' working conditions and the role of trade unions.

Connection with Economics

Economics and politics are closely interrelated. Political economy investigates the economic foundations of politics and political conditions for economic development. International economics studies trade, financial, and investment relations between countries. Economic security is a component of national security. Maritime economy (shipping, port management, shipbuilding, fishing) depends on political stability and security of maritime communications.

Connection with Geography

Geography, especially political geography and geopolitics, is an important component of the course. Geographical position influences states' capabilities and limitations, their foreign policy and security. Geopolitics investigates the influence of geographical factors on politics. Knowledge of maritime geography (straits, canals, sea routes, ports) is necessary for understanding maritime security and geopolitical processes.

Connection with Psychology

Psychology helps understand subjective aspects of political behaviour. Political psychology investigates the motivation of political actors, leadership characteristics, and mass political consciousness. Understanding cognitive biases and perception errors is important for analysing decision-making in crisis situations. Security psychology studies human behaviour under conditions of threats and risks.

Connection with Maritime Safety and Security

The course is directly connected with security disciplines in maritime education. Knowledge of international and maritime security complements practical skills in ship security (ISPS Code), emergency response, and anti-piracy measures. Understanding the political context of threats (terrorism, piracy, armed conflicts) enhances the effectiveness of practical security measures.

Connection with Maritime Law

Maritime law is a specialised field regulating relations in the maritime sphere. The UNCLOS Convention establishes the legal regime for maritime spaces. IMO Conventions (SOLAS, MARPOL, STCW, ISPS Code) regulate navigation safety and security. MLC 2006 protects seafarers' rights. The course provides the political and security context for understanding maritime law.

Connection with Management

Management knowledge is important for understanding the functioning of political systems, international organisations, and shipping companies. Strategic management is connected with developing foreign policy and security strategies. Risk management forms the basis for assessing and managing security risks in shipping. Crisis management is applied for responding to emergencies.

The educational component program consists of the following modules:

Module 1. Foundations of Political Science and Political Systems

Topic 1. Political Science as a Discipline: Subject, Methods, Functions

Political science as an independent field of scientific knowledge about politics, power, and political relations. Subject of political science: political power, political systems, political processes, political behaviour. Methods of political science research: comparative, institutional, behaviourist, systemic, structural-functional. Functions of political science: cognitive, prognostic, instrumental, ideological. Connection of political science with other sciences: philosophy, sociology, economics, law, history. Main paradigms of political science: institutionalism, behaviourism, rational choice, constructivism. Development of political thought: from antiquity (Plato, Aristotle) to modernity (Rawls, Huntington, Fukuyama). Ukrainian political tradition: Ostroh Academy, Kyiv Bratska School, Pylyp Orlyk's Constitution, M. Hrushevsky, V. Lypynsky.

Topic 2. The State in the Political System: Sovereignty and Maritime Borders

The state as the central institution of the political system: characteristics, functions, forms. Theories of state origin: theological, patriarchal, contractual (Hobbes, Locke, Rousseau), violence, Marxist. Characteristics of the state: territory, population, sovereignty, public authority, law, taxes, monopoly on legitimate violence. Functions of the state: internal (legislative, law enforcement, economic, social, cultural-educational) and external (defence, diplomatic, foreign economic). Forms of government: monarchy (absolute, constitutional, parliamentary) and republic (presidential, parliamentary, mixed). Forms of state structure: unitary state, federation, confederation. Political regimes: democracy, authoritarianism, totalitarianism. Rule of law: principles, characteristics, mechanisms. Separation of powers: legislative, executive, judicial.

Maritime specificity of statehood: UN Convention on the Law of the Sea 1982 (UNCLOS) as the foundation of maritime sovereignty: internal waters, territorial sea (12 nautical miles), contiguous zone (24 miles), exclusive economic zone (200 miles), continental shelf. Coastal states vs landlocked states: inequality in access to maritime resources and transport routes. Maritime borders and disputes: delimitation between neighbouring states, historical claims, artificial islands and their legal status. Flag states and flags of convenience: jurisdiction over vessels, 'open registries' (Panama, Liberia, Marshall Islands), problems of control, exploitation of seafarers, tax havens. Port states: right to control vessels in ports (Port State Control), safety inspections, environmental standards, seafarers' working conditions. Failed states and piracy: Somalia as an example of state collapse creating conditions for maritime piracy, smuggling, human trafficking.

Topic 3. Political Parties, Elections and Representation of Maritime Interests

Political parties as institutions for representing interests, aggregating and articulating social demands. Functions of parties: electoral, representative, recruitment of political elite, government formation, political socialisation. Classification of parties: by ideology (left, right, centrist), organisational structure (cadre, mass), relation to power (ruling, opposition). Party systems: single-party, dominant party, two-party, multi-party, polarised pluralism. Electoral systems: majoritarian (relative and absolute majority), proportional (closed and open lists), mixed. Advantages and disadvantages of electoral systems: representativeness, stability, accountability. Electoral process: nomination of candidates, campaign, voting, counting, appeals. Electoral manipulations: gerrymandering, falsifications, administrative resources, vote buying.

Representation of maritime interests in politics. Maritime lobby: shipping associations (International Chamber of Shipping), seafarers' unions (International Transport Workers' Federation), port operators, shipbuilding companies in the political process. Parliamentary committees on maritime issues: their role in legislation on shipping, ports, maritime security, seafarers' labour protection. Electoral activity of seafarers: problems of voting abroad, low turnout due to being at sea during elections, distance voting systems for seafarers. Political representation of port cities: Odesa, Mykolaiv, Mariupol, Kherson as electoral districts with maritime specificity, parties and candidates articulating maritime interests. Maritime issues in party programmes: port infrastructure, support for shipbuilding, seafarers' rights, environmental standards, protectionism vs free trade in the maritime sector.

Topic 4. Civil Society and Collective Action of Seafarers

Civil society as a sphere of voluntary collective action around shared interests, goals, and values, distinct from the state, family, and market. History of the concept: from Aristotle to Tocqueville, Gramsci, Habermas. Structure of civil society: civic organisations, trade unions, religious communities, charitable foundations, media, academic institutions, grassroots initiatives. Functions of civil society: articulation of interests, control of power, socialisation, conflict resolution, service provision, formation of social capital. Social capital: trust, norms of reciprocity, networks, their impact on democracy and economic development. Forms of political participation: electoral (voting, campaigns), non-electoral (petitions, protests, strikes, boycotts), conventional and unconventional.

Organisation of seafarers and collective action. Seafarers' trade unions: International Transport

Workers' Federation (ITF) as a global organisation for protecting seafarers' rights, national trade unions, collective agreements, struggle against exploitation under flags of convenience. Seafarers' strikes: historical examples (British seafarers 1966, dockers 1970-80s), modern strikes for wages, working conditions, repatriation rights. Seafarers' charitable organisations: Mission to Seafarers, Sailors' Society, Stella Maris—providing social, psychological, spiritual support in ports, advocacy, rehabilitation. Advocacy for seafarers' rights: campaigns for ratification of MLC 2006, recognition of seafarers as key workers during pandemics, against abandonment without wages, for safe working conditions. Challenges of organising seafarers: geographical dispersion, short-term contracts, different nationalities and languages, fear of reprisals, communication difficulties at sea.

Module 2. International Relations and Maritime Security

Topic 5. Theories of International Relations and Maritime Communications

International relations as a system of interactions between states, international organisations, and non-state actors. Main IR theories: realism (Morgenthau, Waltz) – anarchy of the international system, balance of power, national interest; liberalism (Kant, Keohane) – international institutions, interdependence, democratic peace; constructivism (Wendt) – ideas, identities, norms shape interests. Levels of IR analysis: individual, state, systemic. IR actors: states (great, middle, small), international organisations (universal, regional), transnational corporations, NGOs, terrorist organisations, individuals. Evolution of the international system: Westphalian system, Vienna system, bipolar Cold War system, US unipolar moment after 1991, multipolarity or return to bipolarity today.

Maritime dimension of international relations. Sea power in realist theory: Alfred Mahan “The Influence of Sea Power upon History” (1890) – control of the seas as the foundation of great power status, British, then American maritime hegemony. International maritime regulation in liberalism: International Maritime Organization (IMO) as an example of effective international cooperation, UNCLOS Convention as the “constitution of the oceans”, regimes for navigation safety, pollution prevention. Critical Sea Lines of Communication (SLOCs): Strait of Malacca (quarter of world trade), Suez Canal, Strait of Hormuz (one-third of oil supplies), Bab el-Mandeb Strait, their control as a geopolitical instrument. Interdependence through maritime trade: 90% of goods transported by sea, disruption of sea routes paralyses the global economy (Suez Canal blockage 2021, Black Sea 2022-2024). Global ocean governance: IMO (safety, environment), International Seabed Authority (resource exploitation), FAO (fishing), problems of IUU fishing, marine debris.

Topic 6. International Maritime Security: Piracy, Terrorism, Smuggling

Security as freedom from threat to vital values and interests. Dimensions of security: military, political, economic, environmental, human. Security concepts: national security, collective security, cooperative security, human security.

Threats to maritime security. Piracy: Somali piracy 2008-2012 (237 attacks in 2011), countermeasures through EU NAVFOR, NATO, armed guards, Best Management Practices. Gulf of Guinea 2019-2023 (most dangerous region): kidnapping of seafarers for ransom, oil theft. Strait of Malacca, South China Sea. UNCLOS defines piracy as a crime under international law.

Maritime terrorism: Achille Lauro 1985, USS Cole 2000, limpet mines in the Persian Gulf 2019. International Ship and Port Facility Security Code (ISPS Code 2004): security levels, port and ship security.

Smuggling by sea: drugs (cocaine by semi-submersibles, heroin), weapons (embargo violations), human smuggling (Mediterranean Sea). Illegal, Unreported and Unregulated fishing (IUU fishing): 20% of world catch, stock depletion, monitoring through AIS.

Topic 7. Maritime Conflicts and International Law of the Sea

International conflicts: causes, types, dynamics. Resolution methods: negotiations, mediation, arbitration, judicial procedures.

Maritime territorial disputes: South China Sea: Claims of China (nine-dash line), Vietnam, Philippines, Malaysia, Brunei. Resources (oil, gas, fish), sea routes (one-third of world trade). China's

artificial islands, militarisation. Arbitration 2016 (Philippines vs China) rejected Chinese claims, but China did not recognise it. US freedom of navigation operations.

Arctic: Melting ice opens access to oil, gas (22% of world's undiscovered reserves), new sea routes (Northern Sea Route, Northwest Passage). Continental shelf claims (Russia, Canada, Denmark, Norway). Lomonosov Ridge, Russian flag on the seabed 2007. Status of routes (Russia: internal waters vs others: international strait). Militarisation. Arctic Council.

Other conflicts: Falkland/Malvinas Islands (UK vs Argentina, 1982 war). Cyprus (Turkish occupation 1974, gas disputes).

International law of the sea as a resolution mechanism: UNCLOS delimitation procedures. Successful examples: Bangladesh-Myanmar 2012, Ghana-Côte d'Ivoire 2017. Problems: states may not comply with decisions (China 2016).

Topic 8. Ukraine in the International Maritime Security System

Ukraine in international relations after 1991: choice between multi-vector policy and European integration. Budapest Memorandum 1994 (security guarantees from USA, UK, Russia in exchange for transfer of nuclear weapons), its violation by Russia.

Ukraine as a maritime state. Geography: 2,782 km coastline (Black Sea 1,628 km, Azov Sea 1,175 km), Danube 174 km. Ports: Odesa (largest), Chornomorsk, Pivdennyi, Mykolaiv (shipbuilding), Kherson, Mariupol, Bilhorod-Dnistrovskiy, Izmail. Ukrainian Navy before 2014: ~20 vessels, frigate "Hetman Sahaidachny". Merchant fleet: 237 vessels (2014). Economic significance: 40% of exports through Odesa, grain trade.

Annexation of Crimea 2014: Seizure of naval bases Sevastopol, Kerch, Donuzlav. Loss of ~70% of the fleet. Loss of control over the Azov Sea (Kerch Strait, bridge 2018). UN GA Resolution 68/262 (2014) – non-recognition of annexation.

Kerch Incident 2018: Seizure of gunboats "Berdyansk", "Nikopol", tugboat "Yani Kapu", capture of 24 sailors. Arbitration under UNCLOS (2019)—release of sailors and return of vessels.

Full-scale invasion from 24.02.2022: Attacks on Snake Island, Odesa, Mykolaiv. Mining of the Black Sea. Naval blockade: impossibility of exporting grain/oil (Ukraine – 4th grain exporter, 1st oil exporter), food crisis. Sinking of cruiser "Moskva" 14.04.2022 (Neptune missiles). Grain Initiative July 2022–July 2023 (33 million tonnes exported, UN+Turkey), collapse of initiative. Alternative corridor via Danube/Constanța. RF attacks on civilian vessels. Ukrainian naval drones: "Tsezar Kunikov", fleet withdrawal from Sevastopol to Novorossiysk.

International support: Anti-ship missiles Harpoon, NSM, naval drones, patrol boats. Sanctions against RF maritime sector: ban on entry to EU ports, restrictions on insurance/financing of oil above \$60/barrel. UN GA resolutions. ICC arrest warrant for Putin (March 2023).

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test

Information resources

1. IMO – International Maritime Organization: <https://www.imo.org/>
2. United Nations – UN: <https://www.un.org/>
3. NATO – North Atlantic Treaty Organization: <https://www.nato.int/>
4. International Court of Justice (ICJ): <https://www.icj-cij.org/>
5. International Tribunal for the Law of the Sea (ITLOS): <https://www.itlos.org/>

6. International Chamber of Shipping (ICS): <https://www.ics-shipping.org/>
7. International Transport Workers' Federation (ITF): <https://www.itfglobal.org/>
8. Council on Foreign Relations: <https://www.cfr.org/>
9. International Institute for Strategic Studies (IISS): <https://www.iiss.org/>
10. Stockholm International Peace Research Institute (SIPRI): <https://www.sipri.org/>
11. Maritime Security Centre – Horn of Africa (MSCHOA): <https://www.mschoa.org/>
12. ICC International Maritime Bureau (IMB): <https://www.icc-ccs.org/>
13. European Union External Action Service – Maritime Security: <https://www.eeas.europa.eu/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1					Module 2								
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.											20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature**Basic Literature:**

1. United Nations Convention on the Law of the Sea (UNCLOS) / United Nations. – New York : UN, 1982. – 202 p. URL: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

2. ISPS Code: International Ship and Port Facility Security Code and SOLAS Amendments 2002 / International Maritime Organization. – 2003 ed. – London : IMO, 2003. – 88 p.
3. Guide to Maritime Security and the ISPS Code / International Maritime Organization. – 2012 ed. – London : IMO, 2012. – 242 p.
4. Bueger, C. What is Maritime Security? / C. Bueger // *Marine Policy*. – 2015. – Vol. 53. – P. 159–164.
5. Till, G. *Seapower: A Guide for the Twenty-First Century* / G. Till. – 4th ed. – London : Routledge, 2018. – 464 p.
6. Heywood, A. *Global Politics* / A. Heywood. – 3rd ed. – London : Palgrave Macmillan, 2023. – 576 p.

Supplementary Literature:

1. Mahan, A. T. *The Influence of Sea Power upon History, 1660–1783* / A. T. Mahan. – Boston : Little, Brown and Company, 1890. – 640 p.
2. Buzan, B. *Security: A New Framework for Analysis* / B. Buzan, O. Wæver, J. de Wilde. – Boulder : Lynne Rienner Publishers, 1998. – 239 p.
3. Waltz, K. N. *Theory of International Politics* / K. N. Waltz. – Long Grove : Waveland Press, 2010. – 251 p.
4. Keohane, R. O. *Power and Interdependence* / R. O. Keohane, J. S. Nye. – 4th ed. – Boston : Pearson, 2012. – 368 p.
5. Wendt, A. *Social Theory of International Politics* / A. Wendt. – Cambridge : Cambridge University Press, 1999. – 429 p.
6. Mearsheimer, J. J. *The Tragedy of Great Power Politics* / J. J. Mearsheimer. – Updated ed. – New York : W. W. Norton, 2014. – 592 p.
7. Huntington, S. P. *The Clash of Civilizations and the Remaking of World Order* / S. P. Huntington. – New York : Simon & Schuster, 2011. – 368 p.
8. Klein, N. *Maritime Security and the Law of the Sea* / N. Klein. – Oxford : Oxford University Press, 2011. – 360 p.
9. Kraska, J. *Contemporary Maritime Piracy: International Law, Strategy, and Diplomacy at Sea* / J. Kraska, R. Pedrozo. – Santa Barbara : Praeger, 2013. – 280 p.
10. Murphy, M. N. *Small Boats, Weak States, Dirty Money: Piracy and Maritime Terrorism in the Modern World* / M. N. Murphy. – New York : Columbia University Press, 2009. – 544 p.
11. Bueger, C. *International Maritime Security* / C. Bueger, T. Edmunds. – Oxford : Oxford University Press, 2020. – 256 p.
12. Chalk, P. *The Maritime Dimension of International Security: Terrorism, Piracy, and Challenges for the United States* / P. Chalk. – Santa Monica : RAND Corporation, 2008. – 64 p.
13. *Best Management Practices to Deter Piracy and Enhance Maritime Security in the Red Sea, Gulf of Aden, Indian Ocean and Arabian Sea (BMP5)* / BIMCO, ICS, INTERTANKO [et al.]. – 5th ed. – London : Witherby Publishing, 2018. – 84 p.
14. Rothwell, D. R. *The International Law of the Sea* / D. R. Rothwell, T. Stephens. – 2nd ed. – Oxford : Hart Publishing, 2016. – 552 p.
15. Tangredi, S. J. *Anti-Access Warfare: Countering A2/AD Strategies* / S. J. Tangredi. – Annapolis : Naval Institute Press, 2013. – 352 p.

16. Kaplan, R. D. *The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate* / R. D. Kaplan. – New York : Random House, 2013. – 432 p.
17. Borgerson, S. G. *The National Interest and the Law of the Sea* / S. G. Borgerson // Council on Foreign Relations Special Report. – 2009. – No. 46. – P. 1–56.
18. Holmes, J. R. *Red Star over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy* / J. R. Holmes, T. Yoshihara. – 2nd ed. – Annapolis : Naval Institute Press, 2018. – 368 p.
19. Ploch, L. *Piracy off the Horn of Africa* / L. Ploch [et al.] // Congressional Research Service Report. – 2011. – R40528. – 52 p.
20. Wilson, B. *Submarine Cables and the Oceans: Connecting the World* / B. Wilson. – Cambridge : UNEP-WCMC, 2009. – 64 p.
21. Bateman, S. *Maritime Security: International Law and Policy Perspectives from Australia and New Zealand* / S. Bateman, A. Bergin. – Wollongong : Centre for Maritime Policy, 2009. – 280 p.
22. Kaldor, M. *New and Old Wars: Organised Violence in a Global Era* / M. Kaldor. – 3rd ed. – Cambridge : Polity Press, 2012. – 268 p.
23. Nye, J. S. *Soft Power: The Means to Success in World Politics* / J. S. Nye. – New York : PublicAffairs, 2004. – 208 p.
24. Morgenthau, H. J. *Politics Among Nations: The Struggle for Power and Peace* / H. J. Morgenthau ; revised by K. W. Thompson, W. D. Clinton. – 7th ed. – Boston : McGraw-Hill, 2006. – 752 p.

Professional Integrity and Gender Equality at Sea

National Transport
University

Professional Integrity and Gender Equality at Sea

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Bairamova Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The maritime industry has traditionally been considered a male-dominated profession; however, contemporary international standards, including the Maritime Labour Convention (MLC 2006) with amendments of 2016 and 2025, ILO Convention No. 190 on Violence and Harassment (2019), the IMO “Women in Maritime” programme, and UN Sustainable Development Goal 5, establish new requirements for seafarers’ professional conduct. The course explores modern approaches to ensuring decent working conditions, combating discrimination, harassment and bullying onboard vessels, fostering an inclusive work environment, and developing the ethical culture of maritime professionals.

The subject of study encompasses international and national standards of professional ethics and gender equality in the maritime industry; legal mechanisms for protection against discrimination, violence and harassment in the workplace; practical skills for recognizing and counteracting unethical behaviour; strategies for building an inclusive corporate culture onboard vessels; psychological aspects of interpersonal interaction during sea voyages; leadership competencies for ensuring a gender-balanced work environment; mechanisms for reporting violations and protecting seafarers’ rights; the role of international organizations (IMO, ILO, ITF) in promoting principles of integrity and equality in the maritime sector. The educational component aims to develop the general competency: the ability to make decisions and act in accordance with the principle of inadmissibility of corruption and any other manifestations of dishonesty.

Interdisciplinary connections.

(general, not tied to specific educational programme)

- humanities – for understanding the moral foundations of professional conduct and social mechanisms of discrimination;
- legal sciences – for studying the legal framework for protecting seafarers’ rights and combating discrimination;
- psychological sciences – for developing effective communication and conflict management skills;
- management sciences – for developing competencies in leading diverse teams;
- professional educational components – for integrating principles of integrity into professional maritime activities.

The educational component program consists of the following modules:

Content Module 1. Professional Integrity and Ethical Standards in the Maritime Industry

Topic 1. International Standards of Professional Ethics in the Maritime Fleet

The concept of professional integrity in the context of the maritime industry. MLC 2006 Convention: key provisions on protecting seafarers' rights and amendments of 2016 and 2025 concerning combating harassment and bullying. ILO Convention No. 190 on Violence and Harassment (2019) and its implementation in the maritime sector. ILO Recommendation No. 206. ICS/ITF Guidance on Eliminating Shipboard Harassment and Bullying. Codes of ethical conduct of leading shipping companies. The role of PSC (Port State Control) in monitoring compliance with standards.

Topic 2. Corporate Culture, Ethical Conduct and Anti-Corruption at Sea

Building an ethical corporate culture in shipping companies. Values of integrity: honesty, responsibility, respect, fairness. The principle of inadmissibility of corruption and any other manifestations of dishonesty in seafarers' professional activities. Ethical dilemmas in the maritime industry: bribery during inspections, document falsification, violation of safety procedures. Conflict of interest and methods of avoidance. The role of senior officers in shaping the ethical climate onboard. Whistleblowing mechanisms and protection of informants. Anti-corruption policies of shipping companies. Practical case studies of ethical violations in the maritime industry and algorithms for making integrity-based decisions.

Topic 3. Combating Discrimination, Harassment and Bullying at Sea

Definition and forms of discrimination: based on gender, race, nationality, religion, age. Sexual harassment: concept, types, consequences. Workplace bullying and mobbing: signs, causes, mechanisms. Psychological impact of discrimination on victims and the work environment. Legal consequences for perpetrators. Complaint procedures under MLC 2006. The role of the master and senior officers in preventing and responding to discrimination cases. Creating a safe environment for reporting incidents.

Topic 4. Conflict Management and Mediation in the Maritime Environment

Nature and types of conflicts in ship crews. Cultural and gender aspects of conflicts. Conflict management strategies: avoidance, accommodation, compromise, collaboration. De-escalation techniques. Fundamentals of mediation: the role of a neutral mediator. Communication skills for conflict resolution. Conflict prevention through effective leadership. Practical exercises in resolving conflict situations onboard.

Content Module 2. Gender Equality and Inclusive Leadership at Sea

Topic 5. Gender Equality in the Maritime Industry: International Context

Statistics on women's participation in the maritime industry: global trends and challenges. IMO "Women in Maritime" programme: history, objectives, achievements. UN Sustainable Development Goal 5 and its implementation in the maritime sector. International Day for Women in Maritime (18 May). Regional Women in Maritime Associations (WIMAs). IMO Global Strategy for Women in Maritime Associations 2024–2029. IMO-WISTA Women in Maritime Survey findings. Barriers and opportunities for women in maritime professions.

Topic 6. Overcoming Gender Stereotypes and Bias at Sea

The nature of gender stereotypes: historical and cultural context. Myths about "women's" and "men's" jobs in the fleet. Unconscious bias and its impact on decision-making. Microaggressions in the workplace: recognition and response. Techniques for overcoming personal biases. The role of male allies in promoting gender equality. Success stories of female captains, engineers and other maritime professionals. Developing gender-neutral professional language and communication.

Topic 7. Inclusive Leadership and Managing Diverse Teams

The concept of inclusive leadership: key competencies and behavioural indicators. Benefits of diversity for team effectiveness. Creating an inclusive work environment onboard. Adapting leadership

style to the needs of different crew members. Mentorship and mentoring to support women’s career development. Equal opportunity policies in recruitment and promotion. Measuring and monitoring inclusivity indicators. Best practices of leading shipping companies.

Topic 8. Psychological Well-being and Crew Support in the Context of Gender Equality

Psychological characteristics of seafarers: stress, isolation, fatigue. Gender aspects of mental health onboard. Impact of discrimination and harassment on psychological well-being. Seafarer support systems: shipping companies, trade unions, charitable organizations. The role of Mission to Seafarers, ISWAN and other organizations. Developing emotional intelligence for effective interpersonal interaction. Work-life balance during sea voyages. Building an atmosphere of trust and mutual support in the crew.

Assessment methods

- Test control
 - Written control works
 - Interviews based on covered topic materials
 - Written frontal questioning of students
 - Frontal, individual, and combined oral questioning
 - Express control
 - Verification of independent work assignments
- Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Information resources

- IMO – International Maritime Organization: <https://www.imo.org/>
- ILO – International Labour Organization: <https://www.ilo.org/>
- ITF Seafarers: <https://www.itfseafarers.org/>
- WISTA International: <https://wistainternational.com/>
- The Mission to Seafarers: <https://www.missiontoseafarers.org/>
- ISWAN – International Seafarers’ Welfare and Assistance Network: <https://www.seafarerswelfare.org/>
- Maritime SheEO: <https://www.maritimesheeo.com/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			

<p>For full-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10. 	<p>Not provided by educational program and curriculum</p>	<p>40</p>	<p>100</p>
<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	<p>20</p>		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating

- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Maritime Labour Convention, 2006, as amended (MLC, 2006). Geneva : International Labour Organization, 2006 (consolidated edition 2022). URL: <https://www.ilo.org/global/standards/maritime-labour-convention/>
2. Violence and Harassment Convention, 2019 (No. 190) / International Labour Organization. Geneva : ILO, 2019. URL: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C190
3. Violence and Harassment Recommendation, 2019 (No. 206) / International Labour Organization. Geneva : ILO, 2019. URL: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:4000085
4. Guidance on Eliminating Shipboard Harassment and Bullying / International Chamber of Shipping, International Transport Workers' Federation. London : ICS, 2016. 24 p.
5. Women in Maritime / International Maritime Organization. London : IMO, 2024. URL: <https://www.imo.org/en/OurWork/TechnicalCooperation/Pages/WomenInMaritime.aspx>
6. IMO-WISTA Women in Maritime Survey 2024: Final Report / International Maritime Organization, WISTA International. London : IMO, 2025. URL: <https://www.imo.org/en/OurWork/TechnicalCooperation/Pages/Women-in-Maritime-Visibility.aspx>

Supplementary Literature:

1. Aggrey, H. Sexual harassment in the maritime industry: A case study of female seafarers in Ghana / H. Aggrey, M. Appiah-Agyekum // Maritime Policy & Management. 2023. Vol. 50(6). P. 742–758.
2. Belcher, P. Women Seafarers: Global Employment Policies and Practices / P. Belcher, H. Sampson, M. Thomas, J. Veiga, M. Zhao. Geneva : International Labour Office, 2003. 140 p.

3. De Silva, R. Gender equality and women empowerment in the maritime industry: The Sri Lankan case / R. De Silva, Y. D. Kim, K. Öçrea // *WMU Journal of Maritime Affairs*. 2021. Vol. 20. P. 325–352.
4. Hofstede, G. *Cultures and Organizations: Software of the Mind* / G. Hofstede, G. J. Hofstede, M. Minkov. 3rd ed. New York : McGraw-Hill, 2010. 576 p.
5. Kitada, M. *Women Seafarers and their Identities* / M. Kitada. Cardiff : Cardiff University, 2010. 280 p.
6. Kitada, M. *Gender Analysis of the Maritime Sector* / M. Kitada, E. Carballo Piñeiro, A. Mejia // *Maritime Women: Global Leadership* / eds. M. Kitada, E. Williams, L. Froholdt. Berlin : Springer, 2015. P. 21–35.
7. McIlroy, J. *Equality in the Maritime Workplace: A Guide to Best Practice* / J. McIlroy. London : Nautilus International, 2019. 48 p.
8. Meyer, E. *The Culture Map: Breaking Through the Invisible Boundaries of Global Business* / E. Meyer. New York : PublicAffairs, 2014. 288 p.
9. Pike, K. Gender in the maritime space: how can the experiences of women seafarers working in the UK shipping industry be improved? / K. Pike, E. Wadsworth, S. Honebon, E. Broadhurst, M. Wincott, A. Watkins // *Journal of Navigation*. 2021. Vol. 74(6). P. 1238–1251.
10. Progoulaki, M. Dealing with multicultural human resources in a socially responsible manner: a focus on the maritime industry / M. Progoulaki, M. Roe // *WMU Journal of Maritime Affairs*. 2011. Vol. 10(1). P. 7–23.
11. Sampson, H. *International Seafarers and Transnationalism in the Twenty-First Century* / H. Sampson. Manchester : Manchester University Press, 2013. 224 p.
12. *Seafarers' Mental Health and Wellbeing* / ISWAN – International Seafarers' Welfare and Assistance Network. London : ISWAN, 2023. URL: <https://www.seafarerswelfare.org/>
13. Tansey, P. *Women at the Helm: 25 Years of IMO's Women in Maritime Programme* / P. Tansey // *WMU Journal of Maritime Affairs*. 2015. Vol. 14(1). P. 143–150.
14. Thomas, M. *Lost at Sea and Lost at Home: The Predicament of Seafaring Families* / M. Thomas, H. Sampson, M. Zhao. Cardiff : SIRC, 2003. 60 p.
15. *The Global Maritime Professional: Navigating a Changing World* / eds. R. McCabe, A. Tholen. Malmö : World Maritime University, 2020. 312 p.

Academic Writing

National Transport
University

Academic Writing

Level of higher education -- first (bachelor's)

Days of classes, class time, auditorium: will be available according to the schedule at <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social and Humanitarian Disciplines

Lectures and practical classes are conducted by

Candidate of Philological Sciences, Associate Professor Medvedieva Olena Yuriivna

Contact information: Email medvedeva19691120@gmail.com
telephone of the department +38 (097) 511-76-40

Address, auditorium number: 7 Izmailska Street, Izmail, auditorium 3 (second floor)

Consultation hours: Wednesday 14:30 -- 16:00

Annotation of the educational component. Modern scientific discourse is a global platform for knowledge exchange, where researchers from different educational components and cultural contexts must communicate effectively while adhering to international academic standards. In such an intellectual environment, mastery of academic writing becomes not just a useful skill, but a fundamental competency for a successful scientific career, publication of research results, and participation in the international academic community.

The educational component "Academic Writing" aims to form in students of higher education systematic knowledge about the principles, norms, and genres of scientific communication, as well as practical skills for creating structured, argumentative, and stylistically correct academic texts. The course covers the features of scientific style, methods of critical literature analysis, citation techniques and plagiarism avoidance, structuring research works of various genres -- from essays and review articles to course projects and qualification works.

Mastery of academic writing provides students with the opportunity to clearly formulate research questions, present the results of their own research in accordance with international standards, participate in scientific publications and conferences, as well as develop critical thinking and analytical abilities necessary for further academic and professional activity.

The subject of study of the educational component "Academic Writing" encompasses both fundamental knowledge about the structure, stylistics, and genre features of scientific texts, as well as applied skills for creating academic works of various types, critical source analysis, and adherence to ethical standards in scientific communication. Students study theoretical foundations and practical mechanisms for constructing reasoned scientific discourse; structural elements and compositional models of academic texts (essays, articles, course papers, thesis papers); the citation system and bibliographic reference formatting according to international standards (APA, MLA, Chicago, etc.); methods of critical reading and analytical work with scientific sources; strategies for formulating research questions, hypotheses, and scientific problems; technologies of academic argumentation and logical construction of scientific text; protocols for avoiding plagiarism and adhering to principles of academic integrity; stylistic norms and linguistic

conventions of scientific style in the Ukrainian language; digital tools and online resources for searching scientific information, checking texts for plagiarism, and managing bibliography; techniques for editing, self-checking, and peer review of academic texts to ensure their quality and compliance with scientific standards.

Interdisciplinary connections with: (general, not tied to the educational program)

- **humanities:** philology, rhetoric, logic, philosophy, cultural studies -- for understanding linguistic norms, argumentation strategies, critical thinking, forming a clear scientific position, and understanding academic culture as a component of universal human culture;
- **social sciences:** psychology, sociology, communication studies, conflict studies -- for studying mechanisms of scientific communication, features of text perception by readers, ethics of interaction in the academic environment, and developing skills for effective presentation of research results;
- information sciences: library science, information literacy, scientometrics, document studies -- for forming skills in searching, selecting, systematizing, analyzing, and citing scientific sources, working with electronic databases and bibliographic systems;
- **legal sciences:** copyright, intellectual property, academic integrity, research ethics -- for understanding legal and ethical aspects of using scientific works, preventing plagiarism, and adhering to academic ethics norms;
- **technical sciences:** information technology, research software, digital communication -- for mastering modern tools for writing, formatting, and designing scientific texts (text editors, reference management systems, plagiarism checking programs);
- **professional educational components:** maritime law, marine resource management, navigation, ship technical systems -- for integrating principles of academic writing in the preparation of professional scientific texts, reports, articles, course papers, and qualification works on maritime topics;
- **foreign languages:** English (for special purposes), maritime English, translation -- for preparing publications in international editions, understanding the specifics of English-language academic discourse, and formatting documentation according to international standards of the maritime industry.

The educational component program consists of the following modules:

Content Module 1. Theoretical foundations and principles of academic culture and writing. Creation and analysis of academic text.

Topic 1. Academic integrity. The ethical code of the scientist.

Academic integrity as a guarantee of quality higher education. Legislative support for academic integrity in Ukraine. Academic culture: concept, functions, components. Academic dishonesty and methods of its prevention. The ethical code of the scientist. Regulations on the system of ensuring academic integrity by pedagogical, scientific-pedagogical and scientific workers and students of higher education at the National Transport University. Bucharest Declaration on ethical principles of higher education.

Topic 2. Main principles of academic writing.

Main characteristics of the concept "academic writing". The concept of academic literacy and its structure. The concept of "personal process -- practice -- public product" in creating an academic text. The role of critical thinking in creating an original academic text by the author.

Topic 3. Copyright. Rules for using intellectual property objects.

Copyright and its objects. Intellectual property. Rules for using intellectual property objects. Legislative support and international agreements on the protection of intellectual property rights. The system of governing bodies in the field of intellectual property rights protection in Ukraine.

Topic 4. Plagiarism and its varieties. Combating plagiarism.

The concept of plagiarism in Ukraine and the world. Ukrainian legislation on preventing plagiarism. Academic plagiarism and its varieties. Means of preventing and combating academic plagiarism. Review of programs aimed at detecting plagiarism. Practical advice on preventing plagiarism. Citation. Paraphrasing. Summarizing. General rules for formatting references in educational and scientific works. DSTU 8302:2015. Bibliographic reference. General provisions and compilation rules. Compiling bibliography in research works.

Topic 5. Academic writing as a type of scientific communication. Scientific style of the Ukrainian language: main features and specific linguistic means.

Scientific style as a component of the stylistic system of the Ukrainian language. Functions of scientific style, its substyles, genres of substyles. Features of scientific style. Linguistic features of scientific style. Lexical norms of scientific text. Features of using academic and professional vocabulary. Syntactic features of academic text. Varieties of scientific style. Lexicographic competence.

Topic 6. Genres of academic texts.

Primary and secondary scientific genres. Elementary and basic models of academic text. Features of preparing an academic text. Annotation and summary of text. Scientific article. Course work.

Secondary scientific genres. Review. Feedback. Abstract. Theses.

Topic 7. Academic essay as one of the genres of academic writing.

Genre features and varieties of academic essay. Stages of organizing the academic writing process (essay writing). Methods of organizing an academic essay. Structure of an academic essay. Recommendations for preparing and writing an academic essay: evaluation criteria. Differentiation of essays by functional purpose (academic / non-academic), content (philosophical, literary-artistic, linguistic, pedagogical, mathematical, etc.), type of speech (description, narration, reasoning, proof).

Topic 8. Oral academic communication. Genres of professional self-presentation.

Functions of scientific communication. Forms of scientific communication. Functions of Internet communication in the field of science. Technologies for presenting scientific work results. General requirements for the content, design, and use of multimedia presentations. Genres of oral academic communication. Professional self-presentation. Resume. Motivation letter.

Content Module 2. Types of academic texts. Structure and principles of editing academic text.

Topic 9. Types of academic texts.

Representational and argumentative forms of speech in academic communication, their types and features. Narrative text. Descriptive text. Reasoning text. Proof text. Definition text.

Topic 10. Content of academic text.

Scientific theory. Functions of scientific theory. Methodology of scientific knowledge. Subject content of new knowledge through the prism of the known, established. Implementation of categories of objectivity, subjectivity, and evaluation in presenting theoretical information. Scientific discussion. Proving / disproving actualized statements.

Topic 11. Intertextuality of academic text.

The concept of one's own / someone else's text. Varieties of compression of academic text. Note-taking. Abstracting. Thesis writing. Annotating. Grouping sources. Systematization of material. Retelling, paraphrasing, compilation, and plagiarism. References, cross-references and citation, re-citation, self-citation: appropriateness, motivation, argumentation, correctness.

Topic 12. Structure of academic text.

Paragraph as a structural element of academic text and a means of implementing categories of coherence and integrity. Paragraph structure. The role of the first sentence in a paragraph. Logical-semantic analysis of sentence and paragraph construction. Types of sentence connections in a paragraph. Appropriateness / inappropriateness of using lexical repetitions. Methods and means of achieving accuracy, consistency, clarity. Analysis and synthesis of material.

Topic 13. Introduction and conclusion in the structure of academic text.

Frame and situational linguistic clichés in academic text. Main functions and characteristics of the introduction of an academic text. Academically literate justification of topic relevance, coverage of the state of problem development, formulation of object, subject, goal, and objectives. Connection between introduction and conclusions. Correlation of topic, goal, objectives, and conclusions of academic text. Typical errors in writing general conclusions. Semantic analysis of fragments of corresponding compositional elements of academic text.

Topic 14. Academic text as an object of editing.

Main (pre-text / textual) approaches to editing academic text. Types of editing academic text. Proofreading. Shortening. Refinement. Rewriting.

Topic 15. Psychological and logical principles of editing academic text.

Adherence to psychological principles of creating academic text. Fact in academic text. Verification of factual material. Psychological causes of factual errors. Errors of excessive activity (verbosity, omission of necessary links in the chain of reasoning or their reduction, etc.). Errors of fatigue (repetitions, inaccuracy in word usage, in argumentation, etc.). Errors of lack of creative imagination, creative approach to writing text (standardization of presentation, working according to a scheme, etc.).

Adherence to logical principles of creating academic text. Law of identity. Law of contradiction. Law of excluded middle. Law of sufficient reason. Techniques that help check the correctness of logical connections. Elimination of logical deficiencies.

Topic 16. Linguistic-stylistic principles of editing academic text.

Editing pre-text units (phrases and sentences) through the prism of semantic valency (compatibility). Selection of normative lexical-semantic and phraseological linguistic means for creating academic text. Varieties of lexical-phraseological violations (unmotivated semantic modification of lexemes; unmotivated wordiness; unmotivated

pleonasm; unmotivated tautology; unmotivated synonymy; unmotivated paronymy; unmotivated interlingual homonymy; unmotivated calquing of lexemes; unmotivated borrowings; unmotivated semantic modification of phrasemes; unmotivated calquing of phrasemes, etc.).

Control methods:

- test control;
- written control works;
- interview on the materials of the reviewed topic;
- written frontal questioning of students at the beginning or end of a lecture;
- frontal, individual, and combined oral questioning;
- express control;
- checking completion of assignments for independent work.

Final control of achieved learning outcomes -- credit in written form.

Sources for studying the educational component

1. Virtual learning environment MOODLE [Electronic resource]. -- Access mode: <https://divt.pp.ua/login/index.php>
2. Electronic resource of NTU library [Electronic resource]. -- Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Purdue Online Writing Lab (OWL) [Electronic resource]. -- Access mode: https://owl.purdue.edu/owl/research_and_citation/index.html
4. Google Scholar [Electronic resource]. -- Access mode: <https://scholar.google.com/>
5. Grammarly [Electronic resource] // Grammarly. -- Access mode: <https://www.grammarly.com/>
6. RefWorks -- Citation Management [Electronic resource]. -- Access mode: <https://refworks.proquest.com/>
7. JSTOR Digital Library [Electronic resource]. -- Access mode: <https://www.jstor.org/>
8. Mendeley Reference Manager [Electronic resource]. -- Access mode: <https://www.mendeley.com/>
9. Academic Phrasebank [Electronic resource] // University of Manchester. -- Access mode: <https://www.phrasebank.manchester.ac.uk/>
10. Writing Commons [Electronic resource]. -- Access mode: <https://writingcommons.org/>

Educational resources:

1. Online courses and platforms
 - Prometheus: massive open online course platform. Academic integrity [Electronic resource]. -- Access mode: <https://prometheus.org.ua/prometheus-free/academic-integrity/>
2. Case studies and examples of academic works
 - Examples of successful course works
 - Analysis of typical errors in student works
 - Analysis of the structure of scientific publications
3. Library resources and databases
 - Google Scholar -- search for scientific publications
 - V. I. Vernadsky National Library of Ukraine
4. Tools for working with sources
 - Zotero, Mendeley -- bibliographic reference managers
 - Plagiarism checkers -- plagiarism checking services

Assessment

The final grade for studying the educational component is calculated using the following categories

Control during the semester			Final assessment	Total points
Module 1	Module 2	Module 3 (I3)		

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	MCR1	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	MCR 2		(test)	
		For full-time form of higher education: – activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 15; – current control works (checking mastery of theoretical material) – 5; – completion of assignments for independent work – 20; – modular control № 1 – 10; – modular control № 2 – 10																Not provided by the educational program and curriculum	40	100
		For part-time form of higher education: – activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – completion of assignments for independent work – 20.																20		

Evaluation criteria: Appendix 1 to the Regulations on the organization of the educational process at the National Transport University

http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late submission policy. Current and final controls are conducted according to the educational process schedule and schedules established by the Scientific and Methodological Council of NTU. In case of absence of a student from control for valid reasons, there is a possibility of individual testing at a time agreed with the teacher, subject to permission from the DIVT NTU directorate.

Re-taking credit in case of receiving an unsatisfactory grade is allowed no more than twice: once -- with the teacher, the second time -- with a commission created by the director of DIVT NTU.

Late assignments. When submitting work without a valid reason later than the established deadline, the grade will be reduced by 10%. Technical problems (equipment breakdown, printing problems) are not a valid reason for late submission of work.

Re-evaluation policy. Within a week after announcement of current control results, a student may contact the evaluator for clarification and/or disagreement regarding the received grade. In case of disagreement with the evaluator's decision regarding semester control results, the student may contact the evaluator with disagreement regarding the received grade on the day of its announcement. Re-taking semester control to improve a positive grade is not allowed.

Attendance and/or activity policy. Attendance at classes is mandatory for students. Failure by a student to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence from classes is grounds for deciding not to admit to semester control. By decision of the director of DIVT NTU, the possibility is provided to complete missed assignments according to an individual schedule (but no later than the completion of semester control).

Plagiarism, academic integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

academic plagiarism;
 falsification;
 cheating;
 deception;

improper advantage;
bribery.

When passing control (current or final), a person taking the control does not have the right to use any external assistance. If the evaluator suspects a person taking the control of using prohibited aids, they have the right to ask them to perform actions that would refute the suspicion. In case of refusal, cheating, use of prohibited aids or external assistance (deception), the result is evaluated as "unsatisfactory".

Classroom behavior. Laptops and portable devices can be used EXCLUSIVELY for educational purposes at the instructor's direction. Improper use of laptops or handheld devices will be considered a violation of discipline; the instructor has the right to initiate appropriate actions.

Eating food and beverages (except water) is prohibited in the classroom. Students and instructors must adhere to ethical norms of behavior.

Students with disabilities or special needs should contact the DIVT NTU directorate and discuss with the instructor issues of organizing studies (before the start of the semester).

If a student experiences health problems that may interfere with studies (strained relationships, increased anxiety, substance abuse, feeling weak, difficulty concentrating and/or lack of motivation), they should contact a medical facility and inform the directorate.

Complaints, suggestions, comments, and notifications about conflict situations within the framework of educational programs can be sent by students to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature:

Main:

1. Revutska S.K. Lecture course on the discipline "Academic Writing" / Ministry of Education and Science of Ukraine, M. Tugan-Baranovsky Donetsk National University of Economics and Trade, Department of Ukrainian Studies; compiled by S.K. Revutska. -- Kryvyi Rih: DonNUET, 2018. -- 81 p.
2. Koloiz Zh.V. Fundamentals of academic writing: practical guide. -- Kryvyi Rih: FOP Marynchenko S.V., 2019. -- 178 p.
3. Martyniuk O.M. Academic writing (lecture notes): educational-methodical publication. -- Lutsk: Vezha, 2021. -- 48 p.
4. Fundamentals of academic writing: educational-methodical manual [Electronic edition] / A. Kiselova, L. Zavalska; National University "Odesa Law Academy". -- Odesa: Feniks, 2023. -- 69 p.
5. Shevchuk S.V., Klymenko I.V. Ukrainian language for professional purposes: textbook. According to the Ministry of Education and Science program. 4th ed., revised and supplemented. -- Kyiv: Alerta, 2011. -- 696 p.

Supplementary:

1. Bibliographic reference. General provisions and compilation rules: DSTU 8302:2015 / National standard of Ukraine. Official edition, effective from 01.07.2016. -- Kyiv: UkrNDNTs, 2016. -- 16 p. (Information and documentation)
2. Academic writing: textbook / compilers: T.M. Kostyrko, S.V. Larenkova, I.V. Bondar, M.S. Zhyhalkina. -- Mykolaiv: NUK, 2022. -- 116 p.
3. Plagiarism in student works: methods of detection and prevention: methodical manual / ed. N.V. Stukalo. -- Dnipropetrovsk: Oles Honchar DNU, 2013. -- 44 p.
4. Examples of bibliographic description formatting in the list of sources used taking into account the National Standard of Ukraine DSTU 8302:2015 "Bibliographic reference. General provisions and compilation rules" [Electronic resource]. -- Access mode: <https://www.grafiati.com/uk/info/dstu-8302-2015/examples/>.
5. On higher education [Electronic resource]: Law of Ukraine dated 16.08.2024 №1556-VII. -- Access mode: <https://zakon.rada.gov.ua/laws/show/1556-18#Text>
6. On education [Electronic resource]: Law of Ukraine dated 16.08.2024 № 2145-VIII. -- Access mode: <https://zakon.rada.gov.ua/laws/show/2145-19#Text>.

7. Shlikhta N., Shlikhta I. Fundamentals of academic writing: Methodical recommendations and course program. -- Kyiv, 2016. -- 61 p.
8. What you need to know about plagiarism: a guide to academic literacy and ethics for "dummies" [Electronic resource]. -- Access mode: https://repository.ldufk.edu.ua/bitstream/34606048/7681/1/ЩО%20ПОТРІБНО%20ЗНАТИ%20ПРО%20ПЛАГІАТ_books_ac-gr.pdf
9. Ukrainian orthography / National Academy of Sciences of Ukraine, O.O. Potebnia Institute of Linguistics; Institute of the Ukrainian Language. -- Kyiv: Naukova Dumka, 2019. -- 392 p.

Socio-Political Studies

National Transport
University

Socio-Political Studies

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by Acting Head of Department, PhD in Philosophy, Associate Professor Olena Bairamova

Contact information Email: bairamova3456@gmail.com
Phone: +38 (095) 801-16-36

Address, classroom
number 7 Izmailska Street, Izmail, classroom 3 (second floor)

Consultation hours Monday, Wednesday 14:30 – 16:00

Annotation of the educational component

The educational component «Socio-Political Studies» is aimed at developing future maritime professionals' comprehensive understanding of socio-political processes in the globalized world and their impact on the maritime industry. The course provides study of modern political systems, international maritime organizations, geopolitical conflicts, and global challenges that directly affect maritime activities. Students master analytical skills for critical understanding of international events, political decisions in the field of shipping, seafarers' labor rights, and environmental standards. The course develops competencies for working in a multicultural environment, understanding geopolitical risks of maritime operations, and professional leadership skills on vessels.

Subject of study of the educational component includes: socio-political processes in the context of the global maritime industry; political regimes and their impact on freedom of navigation; international maritime organizations (IMO, ILO, ICS) and legal mechanisms for regulating maritime activities; geopolitical conflicts over control of sea routes and resources; social challenges of the maritime profession (labor rights, multiculturalism, seafarers' mental health); globalization of trade and the role of maritime transport; environmental transformation of the fleet; information and hybrid threats to maritime security; professional leadership and management of multinational crews.

Interdisciplinary connections.

The educational component integrates knowledge from:

- International maritime law – for understanding the legal foundations of navigation, jurisdiction, and maritime conventions
- Navigation and ship management – for applying political knowledge in maritime operations practice
- Maritime safety – for analyzing geopolitical risks, piracy, terrorism, and hybrid threats
- International economics – for understanding global trade, sanctions, and economic processes
- Ecology and environmental protection – for studying the impact of political decisions on fleet decarbonization
- Psychology – for crew management, intercultural communication, and overcoming professional stress
- History – for analyzing the evolution of maritime trade and geopolitical conflicts
- Sociology – for understanding the social structure of the maritime community and labor relations

- Communications and media – for forming understanding of the information space's impact on the maritime industry

The educational component program consists of the following modules:

Content Module 1. Fundamentals of Socio-Political Knowledge in the Context of Maritime Activities

Topic 1. Socio-Political Studies in a Globalized World

Socio-political studies as an academic discipline for maritime professionals. Features of the subject and methodology in the context of the international maritime environment. Society under conditions of global challenges: pandemics, climate change, migration processes. The role of maritime transport in the global economy and geopolitics.

Topic 2. Political Institutions and International Maritime Organizations

Scientific schools and modern political doctrines. Glossary of categories for maritime professionals. International maritime organizations (IMO, ILO) as political institutions. The role of the state and international law in regulating maritime activities. Implementation of environmental standards in the maritime industry.

Topic 3. Power, Political Regimes, and Maritime Security

Power as a socio-political phenomenon in international relations. Types of political regimes and their impact on maritime trade. Authoritarianism vs. democracy: consequences for freedom of navigation. Piracy, terrorism, and hybrid threats in maritime zones. Geopolitical competition for control of sea routes.

Topic 4. Leadership, Professional Culture, and Multiculturalism at Sea

Personality in the professional maritime environment. Political and professional leadership. The captain as a leader of a multinational crew. Multicultural interaction on vessels. Professional ethics and safety culture. Conflict management in an isolated collective.

Content Module 2. Contemporary Global Processes and the Maritime Industry

Topic 5. Social Challenges of the Maritime Industry

Seafarers' labor rights and the fight against exploitation. Human trafficking and forced labor at sea. MLC 2006 as an instrument of social protection. Seafarers' mental health: isolation, stress, separation from family. Gender equality in the maritime industry.

Topic 6. Public Opinion, Media, and the Maritime Industry's Reputation

Formation of public opinion about the maritime industry. Environmental protests and the «green» agenda. Social media and their impact on the perception of seafarers. Information campaigns regarding piracy and environmental disasters. Digital diplomacy and communications in ports.

Topic 7. Global Socio-Political Processes and Maritime Transport

Globalization of trade and the role of maritime transport (90% of world trade). COVID-19 pandemic: crew change crisis and seafarers' rights. Energy transformation: fleet decarbonization. Digitalization of the maritime industry: autonomous vessels, cyber threats. Seafarer migration and the international labor market.

Topic 8. Geopolitics of the Seas and International Security

World politics and maritime strategies of major powers. Conflicts over the South China Sea, the Arctic, the Black Sea. Freedom of navigation vs. territorial claims. Economic sanctions and their impact on maritime shipping (Russia, Iran, DPRK). Military conflicts and their consequences for civilian shipping (Ukraine, Red Sea). Climate change and new maritime routes.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit test in written form (with grading scale: pass/fail based on accumulated points)

Learning resources

International Maritime Organizations:

1. International Maritime Organization (IMO) [Electronic resource]. – Режим доступа: <https://www.imo.org>
2. International Labour Organization – Maritime Labour Convention [Electronic resource]. – Режим доступа: <https://www.ilo.org/global/standards/maritime-labour-convention/lang--en/index.htm>
3. International Chamber of Shipping (ICS) [Electronic resource]. – Режим доступа: <https://www.ics-shipping.org>
4. BIMCO – Baltic and International Maritime Council [Electronic resource]. – Режим доступа: <https://www.bimco.org>
5. International Transport Workers' Federation (ITF) [Electronic resource]. – Режим доступа: <https://www.itfglobal.org/en/sector/seafarers>

Maritime Security and Geopolitics:

1. U.S. Naval War College – Maritime Security Portal [Electronic resource]. – Режим доступа: <https://usnwc.edu>
2. NATO Shipping Centre [Electronic resource]. – Режим доступа: <https://shipping.nato.int>
3. European Union Naval Force (EU NAVFOR) [Electronic resource]. – Режим доступа: <https://www.operationatalanta.eu>
4. One Earth Future Foundation – Oceans Beyond Piracy [Electronic resource]. – Режим доступа: <https://oceansbeyondpiracy.org>
5. International Maritime Bureau (IMB) – Piracy Reporting Centre [Electronic resource]. – Режим доступа: <https://www.icc-ccs.org/piracy-reporting-centre>
6. Center for International Maritime Security (CIMSEC) [Electronic resource]. – Режим доступа: <https://cimsec.org>

Think Tanks and Research Centers:

1. Council on Foreign Relations – Maritime Security [Electronic resource]. – Режим доступа: <https://www.cfr.org/topics/maritime-security>
2. Chatham House – Maritime Security Programme [Electronic resource]. – Режим доступа: <https://www.chathamhouse.org>
3. Center for Strategic and International Studies (CSIS) [Electronic resource]. – Режим доступа: <https://www.csis.org>
4. The Brookings Institution – Foreign Policy [Electronic resource]. – Режим доступа: <https://www.brookings.edu/topic/foreign-policy/>

Maritime News and Analysis:

1. Lloyd's List – Shipping News [Electronic resource]. – Режим доступа: <https://lloydslist.maritimeintelligence.informa.com>
2. Maritime Executive – Global Maritime News [Electronic resource]. – Режим доступа: <https://www.maritime-executive.com>
3. Safety4Sea – Maritime Safety News [Electronic resource]. – Режим доступа: <https://safety4sea.com>
4. Marine Insight – Merchant Navy Info [Electronic resource]. – Режим доступа: <https://www.marineinsight.com>
5. gCaptain – Maritime & Offshore News [Electronic resource]. – Режим доступа: <https://gcaptain.com>

International Relations and Geopolitics:

1. Foreign Affairs Magazine [Electronic resource]. – Режим доступа: <https://www.foreignaffairs.com>
2. Foreign Policy Magazine [Electronic resource]. – Режим доступа: <https://foreignpolicy.com>
3. The Diplomat – Asia-Pacific Politics [Electronic resource]. – Режим доступа: <https://thediplomat.com>

4. International Institute for Strategic Studies (IISS) [Electronic resource]. – Режим доступа: <https://www.iiss.org>

Environmental and Sustainability:

1. International Maritime Organization – Marine Environment Protection [Electronic resource]. – Режим доступа: <https://www.imo.org/en/OurWork/Environment/Pages/Default.aspx>
2. Getting to Zero Coalition – Decarbonizing Shipping [Electronic resource]. – Режим доступа: <https://www.globalmaritimeforum.org/getting-to-zero-coalition>
3. World Ocean Council [Electronic resource]. – Режим доступа: <https://www.oceancouncil.org>

Human Rights and Labor:

1. Human Rights at Sea [Electronic resource]. – Режим доступа: <https://www.humanrightsatsea.org>
2. Seafarers Rights International [Electronic resource]. – Режим доступа: <https://www.seafarersrights.org>
3. Mission to Seafarers [Electronic resource]. – Режим доступа: <https://www.missiontoseafarers.org>

Educational Resources:

Online Courses (MOOCs):

1. Coursera: International Relations – The Theoretical Foundations [Electronic resource] / Yale University. – Режим доступа: <https://www.coursera.org/learn/international-relations>
2. edX: Geopolitics and International Relations [Electronic resource] / Sciences Po. – Режим доступа: <https://www.edx.org/learn/geopolitics>
3. FutureLearn: Understanding Global Security [Electronic resource] / Leiden University. – Режим доступа: <https://www.futurelearn.com/courses/understanding-global-security>
4. World Maritime University – Online Courses [Electronic resource]. – Режим доступа: <https://www.wmu.se/education/online-education>
5. MIT OpenCourseWare: International Relations [Electronic resource]. – Режим доступа: <https://ocw.mit.edu/courses/political-science/>
6. Coursera: International Organizations Management [Electronic resource] / University of Geneva. – Режим доступа: <https://www.coursera.org/learn/international-organizations-management>

Video Resources:

1. TED Talks: Global Issues [Electronic resource]. – Режим доступа: <https://www.ted.com/topics/global+issues>
2. CrashCourse: Economics [Electronic resource] / YouTube. – Режим доступа: https://www.youtube.com/playlist?list=PL8dPuuaLjXtPNZwz5_o_5uirJ8gQXnhEO
3. CrashCourse: International Relations [Electronic resource] / YouTube. – Режим доступа: <https://www.youtube.com/watch?v=y2t9RL84Zws>
4. Council on Foreign Relations – Video Explainers [Electronic resource]. – Режим доступа: <https://www.cfr.org/video>

Databases and Research Portals:

1. JSTOR – Political Science and International Relations [Electronic resource]. – Режим доступа: <https://www.jstor.org>
2. Google Scholar – Academic Research [Electronic resource]. – Режим доступа: <https://scholar.google.com>
3. ResearchGate – Scientific Network [Electronic resource]. – Режим доступа: <https://www.researchgate.net>
4. Social Science Research Network (SSRN) [Electronic resource]. – Режим доступа: <https://www.ssrn.com>

Podcasts and Multimedia:

1. The Economist – The Intelligence Podcast [Electronic resource]. – Режим доступа: <https://www.economist.com/podcasts>
2. Foreign Policy – The Editor's Roundtable [Electronic resource]. – Режим доступа: <https://foreignpolicy.com/podcasts/editors-roundtable/>

3. BBC World Service – The Documentary [Electronic resource]. – Режим доступа: <https://www.bbc.co.uk/programmes/p02nq0lx/episodes/downloads>
4. NPR – International News [Electronic resource]. – Режим доступа: <https://www.npr.org/sections/world/>

Interactive Tools and Maps:

1. Marine Traffic – Live Ship Tracking [Electronic resource]. – Режим доступа: <https://www.marinetraffic.com>
2. FleetMon – Global Ship Tracking [Electronic resource]. – Режим доступа: <https://www.fleetmon.com>
3. Submarine Cable Map – Global Infrastructure [Electronic resource]. – Режим доступа: <https://www.submarinecablemap.com>
4. ACLED – Armed Conflict Location & Event Data Project [Electronic resource]. – Режим доступа: <https://acleddata.com>
5. Global Peace Index [Electronic resource]. – Режим доступа: <https://www.visionofhumanity.org/maps/>

Official Documents and Reports:

1. United Nations – Official Documents [Electronic resource]. – Режим доступа: <https://www.un.org/en/documents/>
2. European Union – Maritime Affairs [Electronic resource]. – Режим доступа: https://ec.europa.eu/oceans-and-fisheries/index_en
3. U.S. Department of State – Diplomacy in Action [Electronic resource]. – Режим доступа: <https://www.state.gov>
4. UK Government – Maritime Security [Electronic resource]. – Режим доступа: <https://www.gov.uk/government/collections/maritime-security-and-border-control>
5. OECD – Maritime Transport [Electronic resource]. – Режим доступа: <https://www.oecd.org/transport/maritime-transport.htm>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester											Final assessment (credit)	Total points
Module 1					Module 2					Module 3 – Individual Assignment (IA)		
Topic 1	Topic 2	Topic 3	Topic 4	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Modular work № 1 – 10; – Modular work № 2 – 10.											40	100

<p>For part-time form of education:</p> <ul style="list-style-type: none"> – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20. 	20		
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Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the lecturer, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the lecturer has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Tangredi, S. J. Globalization and Maritime Power [Electronic resource] / S. J. Tangredi. – Washington, D.C. : National Defense University Press, 2002. – 590 p.
2. Till, G. Seapower: A Guide for the Twenty-First Century [Electronic resource] / G. Till. – 4th ed. – London : Routledge, 2018. – 520 p.
3. Heywood, A. Politics [Electronic resource] / A. Heywood. – 5th ed. – London : Palgrave, 2019. – 544 p.
4. Kaufman, A. A. The Global Maritime Partnership Initiative and the South China Sea [Electronic resource] / A. A. Kaufman. – Alexandria, VA : CNA, 2009. – 88 p.
5. Bueger, C. What is maritime security? [Electronic resource] / C. Bueger // Marine Policy. – 2015. – Vol. 53. – P. 159–164. – Режим доступу: <https://www.sciencedirect.com/science/article/abs/pii/S0308597X14002929>

Supplementary Literature:

1. Kaplan, R. D. The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate / R. D. Kaplan. – New York : Random House, 2012. – 432 p.
2. Rosenberg, D. A. Governing the Oceans: UN Convention on the Law of the Sea and Beyond [Electronic resource] / D. A. Rosenberg // Georgetown Journal of International Law. – 2021. – Vol. 52. – P. 1–45.
3. Mahan, A. T. The Influence of Sea Power upon History, 1660-1783 / A. T. Mahan. – Boston : Little, Brown and Company, 1890. – 557 p.
4. Vego, M. N. Maritime Strategy and Sea Control: Theory and Practice [Electronic resource] / M. N. Vego. – London : Routledge, 2016. – 264 p.
5. Petersen, M. L. Maritime Security: From Concept to Implementation [Electronic resource] / M. L. Petersen // Journal of the Indian Ocean Region. – 2020. – Vol. 16(2). – P. 167–183.

Business English

National Transport
University

Business English

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The Business English course for maritime students is the next step in developing their language skills and preparing them for their future professional activities. This course is a continuation of the previous stages of English language learning and deepens knowledge from the professional English language course, based on the knowledge, skills and abilities already acquired.

Subject of study of the educational component focuses on vocabulary and grammar related to professional topics, as well as the basics of intercultural English-language business communication in oral and written forms, which enables students to solve practical, professionally-oriented communication tasks taking into account the specific needs of the maritime industry.

Interdisciplinary connections: the educational component “Business English” is closely connected with other courses of the humanities cycle – “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”, and “Business German”.

The educational component program consists of the following modules:

Module 1

Topic 1. IMO Conventions.

Topic 2. Business correspondence.

Topic 3. Basic documentation on board a ship.

Module 2.

Topic 1. Preparing for an interview. Writing a CV.

Topic 2. Employment contract and working conditions.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. BBC Learning English. [Electronic resource]. – Access mode: <https://www.bbc.co.uk/learningenglish/english/>
4. Business English. [Electronic resource]. – Access mode: <https://www.businessenglishsite.com/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester							Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2					
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	MW 2			
For full-time form of education: – Activity during classes – 35; – Completion of independent work assignments – 5; – Module work № 1 – 10; – Module work № 2 – 10.							Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.							20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement

regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Drab N. L. Business Correspondence. A Guide in English, German and Ukrainian. – Vinnytsia: Nova Knyha, 2018. – 240 p.
2. Monastyrskaya O.I. Business English in Maritime Law and Management: textbook. – Odessa: Phoenix, 2024. – 146 p.
3. Tyron O.M. Business English for Ship Engineers. – Kyiv: Lira-K, 2020. – 108 p.

Supplementary Literature:

1. Vydysheva T.V., Monastyrskaya O.I. English in Maritime Business and Law. – Odessa: Phoenix, 2014. – 244 p.
2. Kolisnyk M.P. English for Business Communication: A Textbook. – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2022. – 152 p.
3. Monastyrskaya O.I. English for Senior Nautical Students. – Odessa: Phoenix, 2017. – 212 p.

4. Ocheretna O. English for Crew Managers. – Odessa: Phoenix, 2023. – 180 p.

Bulgarian for Professional Purposes

National Transport
University

Bulgarian for Professional Purposes

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The educational component “**Bulgarian for Professional Purposes**” is aimed at developing higher education students’ practical skills in the Bulgarian language for effective professional communication within their field of specialization. The course focuses on developing listening, reading, speaking, and writing skills in typical professional and workplace situations, as well as mastering terminology relevant to the future profession. Special attention is paid to intercultural communication and understanding the linguistic and cultural characteristics of Bulgarian partners, which contributes to establishing business and international contacts. Completion of the course ensures the formation of foreign language competence necessary for successful professional activity in a globalized environment.

Subject of study of the educational component is the system of the modern Bulgarian language and the patterns of its functioning in professional communication, in particular lexical, grammatical, stylistic, and communicative means required for oral and written professional activities, as well as the specifics of intercultural communication in a Bulgarian-speaking professional environment.

Interdisciplinary connections are established with courses in linguistic, professional-technical, legal, and managerial training of future maritime transport specialists, namely: “Foreign Language (English) for Professional Purposes,” “Navigation and Pilotage,” “Maritime Law and International Maritime Conventions,” which together ensure the comprehensive development of professional foreign language competence.

The educational component program consists of the following modules:

Module 1

Topic 1. The Seafarer’s Profession: Advantages and Disadvantages. Maritime Education.

Topic 2. Duties and Responsibilities of Crew Members.

Topic 3. Ship Structure.

Module 2

Topic 1. Types of Vessels.

Topic 2. Safety on Board. Protective and Life-Saving Equipment.

Topic 3. Emergency Situations.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written/oral form.

Learning resources

1. Bulgarian Online Language Courses – Sofia University “St. Kliment Ohridski” [Електронний ресурс]. – Access mode: <https://www.uni-sofia.bg/>
2. Bulgarian Language Resources – Transparent Language Blog [Електронний ресурс]. – Access mode: <https://blogs.transparent.com/bulgarian/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Popova, M. *Praktychnyi kurs bolharskoi movy : navch. posib. dlia studentiv-filolohiv*. Sofia : Universytetske vydavnytstvo, 2001. 256 p.2.

Supplementary Literature:

1. Bolharsko-ukrainskyi slovnyk / ed. by I. Kochan. Kyiv : Naukova dumka, 2005. 720 p.

Introduction to the Bulgarian Language

National Transport
University

Introduction to the Bulgarian Language

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The educational component “**Introduction to the Bulgarian Language**” is aimed at familiarizing higher education students with the basics of the Bulgarian language as a means of intercultural and professional communication. The course provides for the development of initial listening, reading, speaking, and writing skills, as well as the acquisition of basic vocabulary, elementary grammatical structures, and pronunciation rules. Special attention is paid to mastering the Bulgarian alphabet, phonetic and orthoepic norms, as well as gaining a general understanding of the linguistic and cultural features of Bulgaria. Completion of the course lays the foundation for further study of Bulgarian for professional purposes and for the development of foreign language communicative competence.

Subject of study of the educational component is the fundamentals of the modern Bulgarian language, in particular its phonetic, lexical, and elementary grammatical system, reading and writing rules, basic speech patterns for everyday and academic communication, as well as introductory information on the linguistic and cultural features of the Bulgarian-speaking environment.

Interdisciplinary connections are established with courses in linguistic and general education training of higher education students, in particular with the disciplines “Foreign Language” and “Ukrainian Language for Professional Purposes,” which ensure the formation of basic foreign language and communicative competence.

The educational component program consists of the following modules:

Module 1

Topic 1. Introductions. Polite Expressions. Alphabet. Reading Rules.

Topic 2. Personal Information. My Family.

Topic 3. Days of the Week, Time, Months, Seasons, Weather. Numerals.

Module 2

Topic 1. My Home; Household Items.

Topic 2. My Working Day.

Topic 3. My Leisure Time and Hobbies.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written/oral form.

Learning resources

3. Bulgarian Online Language Courses – Sofia University “St. Kliment Ohridski” [Електронний ресурс]. – Access mode: <https://www.uni-sofia.bg/>
4. Bulgarian Language Resources – Transparent Language Blog [Електронний ресурс]. – Access mode: <https://blogs.transparent.com/bulgarian/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

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If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Georgieva, E. *Vstup do bolharskoi movy : navch. posib. dlia studentiv pochatkovoho rivnia*. Sofia : Nauka i izkustvo, 2000. 198 p.
2. *Pochatkovyi kurs bolharskoi movy : navch. posib.* / M. Popova. Sofia : Universytetske vydavnytstvo, 1999. 224 p.

Supplementary Literature:

1. *Bolharsko-ukrainskyi slovnyk* / ed. by I. Kochan. Kyiv : Naukova dumka, 2005. 720 p.
2. Radeva, V. *Fonetyka suchasnoi bolharskoi movy : navch. posib.* Sofia : Universytetske vydavnytstvo, 2002. 156 p.

Business Bulgarian

National Transport
University

Business Bulgarian

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom
number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The educational component “**Business Bulgarian**” is aimed at developing higher education students’ practical skills in professional communication in Bulgarian within the maritime transport sector. The course focuses on developing listening, reading, speaking, and writing skills in business and workplace situations, mastering terminology necessary for preparing and executing work contracts, drafting business documents, conducting negotiations, and organizing work on board a vessel. Special attention is given to intercultural communication and understanding the linguistic and cultural characteristics of Bulgarian partners, which contributes to effective interaction in an international maritime environment. Completion of the course ensures the formation of professional foreign language competence necessary for a successful career in maritime transport.

Subject of study of the educational component is the system of modern Bulgarian in business and professional contexts, in particular lexical, grammatical, stylistic, and communicative means required for drafting business documents, conducting negotiations, following work instructions on board, as well as the specifics of intercultural communication in a Bulgarian-speaking professional environment.

Interdisciplinary connections are established with courses in linguistic, professional-technical, legal, and managerial training of future maritime transport specialists, in particular with the **disciplines** “Foreign Language (English) for Professional Purposes,” “Navigation and Pilotage,” “Maritime Law and International Maritime Conventions,” which ensure the comprehensive development of professional foreign language competence and readiness for business communication in an international maritime environment.

The educational component program consists of the following modules:

Module 1

Topic 1. IMO Conventions.

Topic 2. Business Correspondence.

Topic 3. Basic Onboard Documentation.

Module 2

Topic 1. Interview Preparation. Resume Writing.

Topic 2. Employment Contract and Working Conditions.

Topic 3. Professional Terminology and Business Communication on Board.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written/oral form.

Learning resources

1. Bulgarian Online Language Courses – Sofia University “St. Kliment Ohridski” [Електронний ресурс]. – Access mode: <https://www.uni-sofia.bg/>
2. **Bulgarian for Professionals – Omniglot** [Електронний ресурс]. – Access mode: <https://www.omniglot.com/language/phrases/bulgarian.php>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
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- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Popova, M. *Praktychnyi kurs bolharskoi movy : navch. posib. dlia studentiv-filolohiv*. Sofia : Universytetske vydavnytstvo, 2001. 256 p.
2. Georgieva, E. *Vstup do bolharskoi movy : navch. posib. dlia studentiv pochatkovoho rivnia*. Sofia : Nauka i izkustvo, 2000. 198 p.

Supplementary Literature:

1. Bolharsko-ukrainskyi slovnyk / ed. by I. Kochan. Kyiv : Naukova dumka, 2005. 720 p.
2. Radeva, V. *Profesiyna terminolohiia bolharskoi movy : navch.-metod. materialy*. Sofia : Universytetske vydavnytstvo, 2004. 152 p.

Practical Course of Bulgarian

National Transport
University

Practical Course of Bulgarian

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The educational component “**Practical Course of Bulgarian**” is aimed at reinforcing and developing practical skills in the Bulgarian language within professional and academic settings. The course provides in-depth work with all types of language activities: listening, reading, speaking, and writing. Special attention is given to the use of language structures in real communicative situations, mastering professionally oriented terminology, drafting business and operational documentation, as well as developing intercultural communication skills. Completion of the course ensures the formation of a high level of foreign language competence necessary for effective professional activity and international communication.

Subject of study of the educational component is the system of modern Bulgarian and the ways it is applied in real professional and academic situations, in particular lexical, grammatical, stylistic, and communicative means required for effective oral and written communication, business documentation, and intercultural interaction.

Interdisciplinary connections are established with courses in linguistic, professional-technical, legal, and managerial training of future maritime transport specialists, in particular with the disciplines “Foreign Language (English) for Professional Purposes,” “Navigation and Pilotage,” “Maritime Law and International Maritime Conventions,” which ensure the comprehensive development of professional foreign language competence and readiness for the practical use of Bulgarian in professional activity.

The educational component program consists of the following modules:

Module 1

Topic 1. Family and People. Appearance and Character.

Topic 2. Food and Shopping. Shops and Prices.

Topic 3. In the City. Directions and Transportation.

Module 2

Topic 1. Daily Life. Typical Communicative Situations.

Topic 2. Health. Visit to the Doctor.

Topic 3. Travel. Asking for Information, Booking Tickets.

Topic 4. My Future Profession.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written/oral form.

Learning resources

1. Bulgarian Online Language Courses – Sofia University “St. Kliment Ohridski” [Електронний ресурс]. – Access mode: <https://www.uni-sofia.bg/>
2. **Practical Bulgarian Course – Omniglot** [Електронний ресурс]. – Access mode: <https://www.omniglot.com/language/phrases/bulgarian.php>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2								
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsestu.pdf

Late Submission Policy.

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Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

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Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Georgieva, E. *Vstup do bolharskoi movy : navch. posib. dlia studentiv pochatkovoho rivnia*. Sofia : Nauka i izkustvo, 2000. 198 p.
2. Popova, M. *Praktychnyi kurs bolharskoi movy : navch. posib. dlia studentiv-filolohiv*. Sofia : Universytetske vydavnytstvo, 2001. 256 p.

Supplementary Literature:

1. *Bolharsko-ukrainskyi slovnyk* / ed. by I. Kochan. Kyiv : Naukova dumka, 2005. 720 p.

Modern Bulgarian Language

National Transport
University

Modern Bulgarian Language

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

The educational component “**Modern Bulgarian Language**” is aimed at developing higher education students’ practical skills for effective communication in Bulgarian across various social, cultural, and professional contexts. The course provides for the development of listening, reading, speaking, and writing skills, mastery of contemporary vocabulary and grammar, as well as the ability to produce written and oral messages of different styles and functions. Special attention is given to intercultural communication, sociolinguistic aspects of modern Bulgarian, and the practical application of language knowledge in everyday and professional situations. Completion of the course ensures the formation of communicative competence and the ability for effective intercultural communication.

Subject of study of the educational component is modern Bulgarian in a wide range of communicative functions, in particular lexical, grammatical, stylistic, and functional means required for oral and written communication, document preparation, participation in discussions and presentations, as well as adapting language behavior according to the cultural and social norms of the Bulgarian-speaking environment.

Interdisciplinary links are established with courses in linguistic, sociocultural, and professional training, in particular with the disciplines “Foreign Language (English) for Professional Purposes,” “International Communication,” “Cultural Studies,” which ensure the comprehensive development of language and intercultural competence, as well as readiness for successful communication in diverse professional and social contexts.

The educational component program consists of the following modules:

Module 1

Topic 1. Countries and Nationalities.

Topic 2. Culture and Traditions of the Target Language Country.

Topic 3. Features of Intercultural Communication in Mixed Crews.

Module 2

Topic 1. Formal and Informal Communication. Key Phrases for General Conversations. Interview

Topic 2. Personal Communication. Social Media Interaction.

Topic 3. Typical Communicative Situations in the Context of Professional Communication.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written/oral form.

Learning resources

1. Bulgarian Online Language Courses – Sofia University “St. Kliment Ohridski” [Електронний ресурс]. – Access mode: <https://www.uni-sofia.bg/>
2. **Bulgarian for Professionals – Omniglot** [Електронний ресурс]. – Access mode: <https://www.omniglot.com/language/phrases/bulgarian.php>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

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- Cheating
- Deception
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Classroom Behavior.

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Recommended literature

Basic Literature:

1. Popova, M. *Praktychnyi kurs bolharskoi movy : navch. posib. dlia studentiv-filolohiv*. Sofia : Universytetske vydavnytstvo, 2001. 256 p.

Supplementary Literature:

1. Bolharsko-ukrainskyi slovnyk / ed. by I. Kochan. Kyiv : Naukova dumka, 2005. 720 p.

2. Radeva, V. *Profesiyna terminolohiia bolharskoi movy : navch.-metod. materialy*. Sofia : Universytetske vydavnytstvo, 2004. 152 p.

Introduction to German

National Transport
University

Introduction to German

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

Graduates of the J5 Maritime and Inland Water Transport specialisation can work not only on ocean-going vessels, but also on inland waterways. To work in multinational crews of ships operating in the waters of the European Union, where the languages of communication are the languages of the EU member states, the need to master the German language is becoming increasingly relevant.

Subject of study of the educational component is the formation of basic knowledge, skills and abilities necessary for communication on everyday and personal topics at an elementary level; overcoming the language barrier.

Interdisciplinary connections: the educational component “Introduction to German” is closely linked to other courses of the humanities cycle – “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”.

The educational component program consists of the following modules:

Module 1

Topic 1. Meeting people. Formal phrases. The alphabet. Reading rules.

Topic 2. Personal information. My family.

Topic 3. Days of the week, time, months, seasons, weather. Numerals.

Module 2.

Topic 1. My home; things in the house.

Topic 2. My working day.

Topic 3. My free time and hobbies.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Multilingual website for learning German. [Електронний ресурс]. – Режим доступу: <https://deutsch.info/?hl=en&utm>
4. Goethe-Institut. [Electronic resource]. – Access mode: <https://www.goethe.de/ins/ua/de/spr/ueb/ele.html>
5. Deutsche Welle. [Electronic resource]. – Access mode: <https://learngerman.dw.com/en/beginners/s-62078399>
6. Online German Learning Portal. [Electronic resource]. – Access mode: <https://www.learngermanonline.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes – 35; – Completion of independent work assignments – 5; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

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Late Assignments.

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Attendance and/or Activity Policy.

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Classroom Behavior.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Korol, E. O. et al. German Language: First Encounters (Deutsch: Erste Begegnungen): Textbook. – Zhytomyr: Zhytomyr State University Publishing House, 2020. – 226 p.
2. Kudina O.F. Deutsch für Anfänger : textbook for students of higher educational institutions – 4th edition. – Vinnytsia: Nova Knyha, 2018. – 520 p.
3. Pavlyshynetska O.O., Peryshak B.Ya. Introductory Course in German. Practical guide to German for students of foreign language departments. – Ivano-Frankivsk, 2013. – 75 p.

Supplementary Literature:

1. Boichevska, I. B., Veremuk, L. L. German language: manual for students of higher education institutions (German as a second foreign language). Pavlo Tychyna Uman State Pedagogical University. – Uman: Vizavi, 2020. – 104 p.
2. Lysenko E. I. Deutsch. German: textbook. – Kyiv: Osvita, 2000. – 256 p.
3. Lysenko, E. I. German-Ukrainian, Ukrainian-German Dictionary: 70,000 Words and Phrases. 6th ed., rev. and expanded. – Vinnytsia: Nova Knyha, 2012. – 976 p.
4. Petrenko M.O. German for Beginners: Textbook. Khmelnytskyi University of Management and Law named after Leonid Yuzkov. – Khmelnytskyi, 2020. – 79 p.

Business German

National Transport
University

Business German

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

Graduates of the J5 Maritime and Inland Water Transport specialisation can work not only on ocean-going vessels, but also on inland waterways. To work in multinational crews of ships operating in the waters of the European Union, where the languages of communication are the languages of the EU member states, the need to master the German language is becoming increasingly relevant. The modern German language course is a continuation and deepening of the knowledge acquired in the introductory and practical German language courses. It is based on the basic knowledge, skills and abilities acquired in previous courses.

Subject of study of the educational component focuses on vocabulary and grammar related to professional topics, as well as the basics of intercultural German-language business communication in oral and written forms, which enables students to solve practical, professionally-oriented communication tasks taking into account the specific needs of the maritime industry.

Interdisciplinary connections: the educational component “Business German” is closely linked to other courses of the humanities cycle – “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”, “Modern German”, “German for Specific Purposes”, “Business English”, and “Business German”.

The educational component program consists of the following modules:

Module 1

Topic 1. IMO Conventions.

Topic 2. Business correspondence.

Topic 3. Basic documentation on board a ship.

Module 2.

Topic 1. Preparing for an interview. Writing a CV.

Topic 2. Employment contract and working conditions.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials

- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
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4. Goethe-Institut. [Electronic resource]. – Access mode: <https://www.goethe.de/ins/ua/de/spr/ueb/ele.html>
5. Deutsche Welle. [Electronic resource]. – Access mode: <https://learngerman.dw.com/en/beginners/s-62078399>
6. Online German Learning Portal. [Electronic resource]. – Access mode: <https://www.learngermanonline.org/>
7. Journal fur junge Deutschler. [Electronic resource]. – Access mode: <https://www.vitaminde.de/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester							Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2					
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	MW 2			
For full-time form of education: – Activity during classes – 35; – Completion of independent work assignments – 5; – Module work № 1 – 10; – Module work № 2 – 10.							Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.							20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

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Recommended literature

Basic Literature:

1. Drab N. L. Business Correspondence. A Guide in English, German and Ukrainian. – Vinnytsia: Nova Knyha, 2018. – 240 p.
2. Lalayan N. S. Business Correspondence – Geschäftliche Korrespondenz: textbook for students of higher educational institutions. – Vinnytsia: Nova Knyha, 2013. – 128 p.
3. Oliinyk V.O., Gavrysh M.M. German Business Language: Practical Guide. – Kyiv: MAUP, 2012. – 189 p.
4. Palasyuk M. I. Textbook 'German Language for Professional Purposes for Students of Technical Specialities'. – Ternopil, Ternopil National Technical University, 2023 – 196 p.

Supplementary Literature:

1. Borysko N.F. Business German Course. – Kyiv: Logos, 2004. – 352 p.
2. Lysenko, E. I. German-Ukrainian, Ukrainian-German Dictionary: 70,000 Words and Phrases. 6th ed., rev. and expanded. – Vinnytsia: Nova Knyha, 2012. – 976 p.
3. Umanets T.D., Yaremko I.A. Ukrainian-German Reference Book and Practical Guide to Business Language: Textbook. – Dnipropetrovsk: National Mining University, 2004. – 140 p.

German for Specific Purposes

National Transport
University

German for Specific Purposes

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

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Consultation hours

Educational component annotation

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Subject of study of the educational component focuses on further developing communication skills, expanding vocabulary and grammar, improving reading, listening and writing skills, and studying cultural and international aspects of professional communication.

Interdisciplinary connections: the educational component “German for Specific Purposes” is closely linked to other courses of the humanities cycle – “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”, “Practical German Language Course”, “Modern German”, “Business English”, and “Business German”.

The educational component program consists of the following modules:

Module 1

Topic 1. The seafarer's profession, advantages and disadvantages. Maritime education.

Topic 2. Duties of crew members.

Topic 3. Ship structure.

Module 2.

Topic 1. Types of ships.

Topic 2. Safety on board a ship. Protective and rescue equipment.

Topic 3. Emergency situations.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials

- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

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2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
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For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.										

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- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Kudina O.F. Deutsch für Anfänger : textbook for students of higher educational institutions. – 4th edition. – Vinnytsia: Nova Knyha, 2018. – 520 p.
2. Palasyuk M. I. Textbook ‘German Language for Professional Purposes for Students of Technical Specialities’. – Ternopil, Ternopil National Technical University, 2023 – 196 p.
3. Renate Karchner-Ober. Im Beruf Neu Fachwortschatztrainer Technik. – Hueber, 2019. – 96 c.

Supplementary Literature:

1. Garkusha, I. Yu. Methodological guidelines for practical classes and independent work in the discipline ‘Second Foreign Language (German)’ for applicants: higher education level - first (bachelor's), field of knowledge: 24 ‘Service Sector’ / J ‘Transport and Services’ [Electronic resource]: speciality: 242 ‘Tourism and Recreation’ / J 3 ‘Tourism and Recreation’, educational programme: ‘International Tourism’, ‘Tourism’. NTU, Department of Foreign Languages. – Kyiv: NTU, 2025. – 78 p.
2. Kudina O.F. Countries where German is spoken: a textbook on linguistics and country studies. — 2nd ed., rev. — Vinnytsia: Nova Knyha, 2017. — 416 p.
3. Lysenko, E. I. German-Ukrainian, Ukrainian-German Dictionary: 70,000 Words and Phrases. 6th ed., rev. and expanded. – Vinnytsia: Nova Knyha, 2012. – 976 p.

Practical German Language Course

National Transport
University

Practical German Language Course

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom
number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

Graduates of the J5 Maritime and Inland Water Transport specialisation can work not only on ocean-going vessels, but also on inland waterways. To work in multinational crews of ships operating in the waters of the European Union, where the languages of communication are the languages of the EU member states, the need to master the German language is becoming increasingly relevant.

Subject of study of the educational component is the formation of socialisation in the linguistic environment, the formation of basic knowledge of sentence construction, the formation of lexical, grammatical and syntactic knowledge, which will enable them to communicate on the most important topics related to everyday life, transportation, going ashore and visiting the port and city by crew members, as well as to overcome the barrier to communication at the initial level on professional topics when performing duties on the ship.

Interdisciplinary connections: the educational component “Practical German Language Course” is closely connected with the educational components “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”, “Introduction to German”, “Business English”, and “Business German”.

The educational component program consists of the following modules:

Module 1

Topic 1. Family and people. Appearance and character.

Topic 2. Food and shopping. Shops and prices.

Topic 3. In the city. Directions and transport.

Module 2.

Topic 1. Everyday life. Typical communication situations.

Topic 2. Health. Visiting the doctor.

Topic 3. Travelling. Requesting information, booking tickets.

Topic 4. My future profession.

Assessment methods

- Test control

- Written control works
- Interviews based on covered topic materials
- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Multilingual website for learning German. [Електронний ресурс]. – Режим доступу: <https://deutsch.info/?hl=en&utm>
4. Goethe-Institut. [Electronic resource]. – Access mode: <https://www.goethe.de/ins/ua/de/spr/ueb/ele.html>
5. Deutsche Welle. [Electronic resource]. – Access mode: <https://learngerman.dw.com/en/beginners/s-62078399>
6. Online German Learning Portal. [Electronic resource]. – Access mode: <https://www.learngermanonline.org/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2								
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes – 35; – Completion of independent work assignments – 5; – Module work № 1 – 10; – Module work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from

assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

During assessment (current or final), the person being assessed has no right to use any external (third-party) assistance. If the assessor suspects the person being assessed of using unauthorized aids, they have the right to ask them to perform actions that would dispel the suspicion. In case of refusal, cheating, use of unauthorized aids or external assistance (deception), the result is assessed as «unsatisfactory».

Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Kudina O.F. Deutsch für Anfänger : textbook for students of higher educational institutions – 4th edition. – Vinnytsia: Nova Knyha, 2018. – 520 p.
2. Pavlyshynetska O.O., Peryshak B.Ya. Introductory Course in German. Practical guide to German for students of foreign language departments. – Ivano-Frankivsk, 2013. – 75 p.

Supplementary Literature:

1. Boichevska, I. B., Veremuk, L. L. German language: manual for students of higher education institutions (German as a second foreign language). Pavlo Tychyna Uman State Pedagogical University. – Uman: Vizavi, 2020. – 104 p.
2. Lysenko E. I. Deutsch. German: textbook. – Kyiv: Osvita, 2000. – 256 p.
3. Lysenko, E. I. German-Ukrainian, Ukrainian-German Dictionary: 70,000 Words and Phrases. 6th ed., rev. and expanded. – Vinnytsia: Nova Knyha, 2012. – 976 p.
4. Petrenko M.O. German for Beginners: Textbook. Khmelnytskyi University of Management and Law named after Leonid Yuzkov. – Khmelnytskyi, 2020. – 79 p.

Modern German

National Transport
University

Modern German

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours

Educational component annotation

Graduates of the J5 Maritime and Inland Water Transport specialisation can work not only on ocean-going vessels, but also on inland waterways. To work in multinational crews of ships operating in the waters of the European Union, where the languages of communication are the languages of the EU member states, the need to master the German language is becoming increasingly relevant. The modern German language course is a continuation and deepening of the knowledge acquired in the introductory and practical German language courses. It is based on the basic knowledge, skills and abilities acquired in previous courses.

Subject of study of the educational component focuses on further developing communication skills, expanding vocabulary and grammar, improving reading, listening and writing skills, and familiarising students with various aspects of the culture of German-speaking countries.

Interdisciplinary connections: the educational component “Modern German” is closely linked to other courses of the humanities cycle – “English for Seafarers”, “Ethical and Religious Tolerance in Multinational Ship Crews”, “Practical German Language Course”, “Business English”, and “Business German”.

The educational component program consists of the following modules:

Module 1

Topic 1. Countries and nationalities.

Topic 2. Culture and traditions of the country whose language is being studied.

Topic 3. Features of intercultural communication in mixed crews.

Module 2.

Topic 1. Formal and informal communication. Basic phrases and clichés for communicating on general topics.

Topic 2. Personal communication. Communication on social media.

Topic 3. Typical communication situations in the work environment.

Assessment methods

- Test control
- Written control works

- Interviews based on covered topic materials
- Frontal, individual, and combined oral questioning
- Checking independent work assignments

Final assessment – credit in oral form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Multilingual website for learning German. [Електронний ресурс]. – Режим доступу: <https://deutsch.info/?hl=en&utm>
4. Goethe-Institut. [Electronic resource]. – Access mode: <https://www.goethe.de/ins/ua/de/spr/ueb/ele.html>
5. Deutsche Welle. [Electronic resource]. – Access mode: <https://learngerman.dw.com/en/beginners/s-62078399>
6. Online German Learning Portal. [Electronic resource]. – Access mode: <https://www.learngermanonline.org/>
7. Journal fur junge Deutschlerner. [Electronic resource]. – Access mode: <https://www.vitaminde.de/>

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes – 35; – Completion of independent work assignments – 5; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from

assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the DIWT NTU administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of DIWT NTU.

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the DIWT NTU director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

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Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the DIWT NTU administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Dutka, M.V. Theoretical and Practical Course in German: Phonetics, Grammar (for first- and second-year students of all disciplines). – Ternopil: TNTU, 2015. – 176 p.
2. Kudina O.F. Countries where German is spoken: a textbook on linguistics and country studies. — 2nd ed., rev. – Vinnytsia: Nova Knyha, 2017. – 416 p.
3. Kudina O.F. Deutsch für Anfänger : textbook for students of higher educational institutions. – 4th edition. – Vinnytsia: Nova Knyha, 2018. – 520 p.

Supplementary Literature:

1. Boichevska, I. B., Veremuk, L. L. German language: manual for students of higher education institutions (German as a second foreign language). Pavlo Tychyna Uman State Pedagogical University. – Uman: Vizavi, 2020. – 104 p.
2. Dutka M.V. Teaching and methodical guide to German grammar for independent study. – Ternopil, 2012. – 170 p.
3. Lysenko, E. I. German-Ukrainian, Ukrainian-German Dictionary: 70,000 Words and Phrases. 6th ed., rev. and expanded. – Vinnytsia: Nova Knyha, 2012. – 976 p.

Business Romanian

National Transport
University

Business Romanian

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours Monday, Wednesday 14:30 – 16:00

Educational component annotation

The educational component «Business Romanian» is aimed at providing students with basic knowledge of Romanian as a means of everyday and intercultural communication. The course provides an introduction to the basic linguistic norms, phonetic and grammatical features of the Romanian language, as well as developing basic oral and written communication skills. Mastering the course creates facilitates of students' adaptation to studying, living and socialising in Romania, and serves as a basis for further study of the Romanian language.

Subject of study of the educational component includes Romanian language as a system of linguistic means and rules for their use in the process of elementary oral and written communication, covering phonetic, lexical and grammatical features, as well as basic speech patterns of everyday and social communication.

Interdisciplinary connections: «English for Specific Purposes», «Ukrainian for Specific Purposes», «Health and Safety, Basics of Labor Protection and Medical Aid», «Ethics and Religious Tolerance in Multinational Crews».

The educational component program consists of the following modules:

Module 1

1. IMO Conventions.
2. Business correspondence.
3. Basic documentation on board a ship.

Module 2

1. Preparing for an interview. Writing a CV.
2. Employment contract and working conditions.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning

- Express control
- Verification of independent work assignments

Final assessment – credit in written form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Pop L. Română cusaufără profesor, – Ed. a V-a. Cluj-Napoca: Editura Echinox, 2003. – 352 p. [Electronic resource]. – Access mode: <https://nadpsu.edu.ua/wp-content/uploads/2024/11/fb-09.3-praktychnyj-kurs-rumunskoyi-movy.pdf>.
4. Semchynskyi, S. Romanian Language for University Students. – Bukrek, 2018. – 248 p. [Electronic resource]. – Access mode: <https://ru.scribd.com/document/701811045/1semchins-Kiy-Stanislav-Rumuns-Ka-Mova1224864691>.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester							Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2					
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – – Module work № 2 – 10.							Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.							20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of the SSU «DIWT NTU» .

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

Within one week after announcement of current assessment results, a student may contact the assessor for clarification and/or disagreement regarding the received grade. In case of disagreement with the assessor's decision regarding semester assessment results, a student may contact the assessor with disagreement regarding the received grade on the day of its announcement. Retaking semester assessment to improve a positive grade is not allowed.

Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the SSU «DIWT NTU» director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

Students with disabilities or special needs should contact the SSU «DIWT NTU» administration and discuss with the lecturer questions of organizing studies (before the beginning of the semester).

If a student experiences health problems that may interfere with learning (strained relationships, increased anxiety, use of prohibited substances, feelings of weakness, difficulty concentrating and/or lack of motivation), they should contact a medical institution and inform the administration.

Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Pop L. Română cusaufără profesor, – Ed. a V-a. Cluj-Napoca: Editura Echinox, 2003. – 352 p. [Electronic resource]. – Access mode: <https://nadpsu.edu.ua/wp-content/uploads/2024/11/fb-09.3-praktychnyj-kurs-rumunskoyi-movy.pdf>.

2. Semchynskyi, S. Romanian Language for University Students. – Bukrek, 2018. – 248 p. [Electronic resource]. – Access mode: <https://ru.scribd.com/document/701811045/1semchins-Kiy-Stanislav-Rumuns-Ka-Mova1224864691>.

Supplementary Literature:

1. Popescu C. Gramatica limbii române pentru străini. București : Corint, 2017. 180 p. [Electronic resource]. – Access mode: <https://m.edituracorint.ro/manual/limba-si-literatura-romana-x-iancu.pdf>.

RomanianPod101 – online resource for learning Romanian (lessons, audio, vocabulary). [Electronic resource]. – Access mode: <https://www.romanianpod101.com>.

2. Loecsen – free online Romanian course for beginners. [Electronic resource]. – Access mode: <https://www.loecsen.com/ua/вивчати-румунську>.

Practical Romanian language course

National Transport
University

Practical Romanian language course

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours Monday, Wednesday 14:30 – 16:00

Educational component annotation

The educational component «Practical Romanian language course» is aimed at providing students with basic knowledge of Romanian as a means of everyday and intercultural communication. The course provides an introduction to the basic linguistic norms, phonetic and grammatical features of the Romanian language, as well as developing basic oral and written communication skills. Mastering the course creates facilitates of students' adaptation to studying, living and socialising in Romania, and serves as a basis for further study of the Romanian language.

Subject of study of the educational component includes Romanian language as a system of linguistic means and rules for their use in the process of elementary oral and written communication, covering phonetic, lexical and grammatical features, as well as basic speech patterns of everyday and social communication.

Interdisciplinary connections: «English for Specific Purposes», «Ukrainian for Specific Purposes», «Health and Safety, Basics of Labor Protection and Medical Aid», «Ethics and Religious Tolerance in Multinational Crews».

The educational component program consists of the following modules:

Module 1

1. Family and people. Appearance and character.
2. Food and shopping. Shops and prices.
3. In the city. Directions and transport.

Module 2

1. Everyday life. Typical communication situations.
2. Health. Visiting the doctor.
3. Travel. Requesting information, booking tickets.
4. My future profession.

Assessment methods

- Test control

- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
2. NTU Library Electronic Resource [Electronic resource]. – Access mode: <http://lib.ntu.edu.ua/catalog/login.html>
3. Pop L. Română cusufără profesor, – Ed. a V-a. Cluj-Napoca: Editura Echinox, 2003. – 352 p. [Electronic resource]. – Access mode: <https://nadpsu.edu.ua/wp-content/uploads/2024/11/fb-09.3-praktychnyj-kurs-rumunskoyi-movy.pdf>.
4. Semchynskiy, S. Romanian Language for University Students. – Bukrek, 2018. – 248 p. [Electronic resource]. – Access mode: <https://ru.scribd.com/document/701811045/1semchins-Kiy-Stanislaw-Rumuns-Ka-Mova1224864691>.

Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester										Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2								
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	Topic 4	MW 2				
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – – Module work № 2 – 10.										Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.										20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protseesu.pdf

Late Submission Policy.

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Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of the SSU «DIWT NTU» .

Late Assignments.

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Reassessment Policy.

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Attendance and/or Activity Policy.

Attendance at classes is mandatory for students. Failure to complete tasks defined by the individual curriculum for practical/seminar/laboratory classes due to absence is grounds for deciding not to admit to semester assessment. By decision of the SSU «DIWT NTU» director, an opportunity to complete missed assignments on an individual schedule (but no later than the end of semester assessment) may be provided.

Plagiarism, Academic Integrity: http://vstup.ntu.edu.ua/polozhennyantu_dobroch.pdf

Violations of academic integrity include:

- Academic plagiarism
- Falsification
- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

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Students can send their complaints, suggestions, comments, and reports of conflict situations within educational programs to the trust box <https://dfmrt.duit.edu.ua/trust-and-support/trust-box/>

Recommended literature

Basic Literature:

1. Pop L. Română cusaufără profesor, – Ed. a V-a. Cluj-Napoca: Editura Echinox, 2003. – 352 p. [Electronic resource]. – Access mode: <https://nadpsu.edu.ua/wp-content/uploads/2024/11/fb-09.3-praktychnyj-kurs-rumunskoyi-movy.pdf>.
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Supplementary Literature:

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Romanian language for specific purposes

National Transport
University

Romanian language for specific purposes

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours Monday, Wednesday 14:30 – 16:00

Educational component annotation

The educational component «Romanian language for specific purposes» is aimed at providing students with basic knowledge of Romanian as a means of everyday and intercultural communication. The course provides an introduction to the basic linguistic norms, phonetic and grammatical features of the Romanian language, as well as developing basic oral and written communication skills. Mastering the course creates facilitates of students' adaptation to studying, living and socialising in Romania, and serves as a basis for further study of the Romanian language.

Subject of study of the educational component includes Romanian language as a system of linguistic means and rules for their use in the process of elementary oral and written communication, covering phonetic, lexical and grammatical features, as well as basic speech patterns of everyday and social communication.

Interdisciplinary connections: «English for Specific Purposes», «Ukrainian for Specific Purposes», «Health and Safety, Basics of Labor Protection and Medical Aid», «Ethics and Religious Tolerance in Multinational Crews».

The educational component program consists of the following modules:

Module 1

1. The seafarer's profession, advantages and disadvantages. Maritime education.
2. Crew members' responsibilities.
3. Ship structure.

Module 2

1. Types of ships.
2. Safety on board. Protective and rescue equipment.
3. Emergency situations.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials

- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

Current and final assessments are conducted according to the educational process schedule and schedules established by the Scientific and Methodical Council of NTU. In case of a student's absence from assessment for valid reasons, individual assessment is possible at a time agreed with the instructor, subject to permission from the administration.

Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of the SSU «DIWT NTU» .

Late Assignments.

When submitting work later than the established deadline without valid reason, the grade will be reduced by 10%. Technical problems (equipment failure, printing problems) are not considered valid reasons for late submission.

Reassessment Policy.

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Attendance and/or Activity Policy.

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- Cheating
- Deception
- Improper advantage
- Bribery

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Classroom Behavior.

Laptops and portable devices may be used EXCLUSIVELY for educational purposes at the lecturer's direction. Improper use of laptops or portable devices will be considered a disciplinary violation, and the instructor has the right to initiate appropriate actions.

Eating and drinking (except water) are prohibited in the classroom. Students and lecturers must adhere to ethical behavioral norms.

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Supplementary Literature:

1. Popescu C. Gramatica limbii române pentru străini. București : Corint, 2017. 180 p. [Electronic resource]. – Access mode: <https://m.edituracorint.ro/manual/limba-si-literatura-romana-x-iancu.pdf>. RomanianPod101 – online resource for learning Romanian (lessons, audio, vocabulary). [Electronic resource]. – Access mode: <https://www.romanianpod101.com>.
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Modern Romanian language

National Transport
University

Modern Romanian language

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours Monday, Wednesday 14:30 – 16:00

Educational component annotation

The educational component «Modern Romanian language» is aimed at providing students with basic knowledge of Romanian as a means of everyday and intercultural communication. The course provides an introduction to the basic linguistic norms, phonetic and grammatical features of the Romanian language, as well as developing basic oral and written communication skills. Mastering the course creates facilitates of students' adaptation to studying, living and socialising in Romania, and serves as a basis for further study of the Romanian language.

Subject of study of the educational component includes Romanian language as a system of linguistic means and rules for their use in the process of elementary oral and written communication, covering phonetic, lexical and grammatical features, as well as basic speech patterns of everyday and social communication.

Interdisciplinary connections: «English for Specific Purposes», «Ukrainian for Specific Purposes», «Health and Safety, Basics of Labor Protection and Medical Aid», «Ethics and Religious Tolerance in Multinational Crews».

The educational component program consists of the following modules:

Module 1.

1. Countries and nationalities.
2. Culture and traditions of the country whose language is being studied.
3. Features of intercultural communication in mixed crews.

Module 2

1. Formal and informal communication. Basic clichéd phrases for conversation on general topics.
2. Personal communication. Communication on social media.
3. Typical communicative situations in the context of work communication.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials

- Written frontal questioning of students
- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written form.

Learning resources

1. Virtual Learning Environment MOODLE [Electronic resource]. – Access mode: <https://divt.pp.ua/login/index.php>
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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
For part-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 20; – Completion of independent work assignments – 20.								20		

Assessment criteria: Appendix 1 to the Regulations on the Organization of the Educational Process at the National Transport University http://vstup.ntu.edu.ua/pro_orhanizatsiyu_osvitnoho_protsesu.pdf

Late Submission Policy.

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Retaking an exam/credit test in case of receiving an unsatisfactory grade is allowed no more than twice: once with the lecturer, and once with a commission created by the director of the SSU «DIWT NTU» .

Late Assignments.

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Reassessment Policy.

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Attendance and/or Activity Policy.

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Classroom Behavior.

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Introduction to the Romanian language

National Transport
University

Introduction to the Romanian language

Higher education level – first (bachelor's)

Class days, class times, classroom: will be available according to the schedule at the link <http://www.ntu.edu.ua/studentam/rozklad/>

Department of Social Sciences and Humanities

Lectures and practical classes are conducted by

Contact information

Address, classroom number 7 Izmailska Street, Izmail

Consultation hours Monday, Wednesday 14:30 – 16:00

Educational component annotation

The educational component «Introduction to the Romanian language» is aimed at providing students with basic knowledge of Romanian as a means of everyday and intercultural communication. The course provides an introduction to the basic linguistic norms, phonetic and grammatical features of the Romanian language, as well as developing basic oral and written communication skills. Mastering the course creates facilitates of students' adaptation to studying, living and socialising in Romania, and serves as a basis for further study of the Romanian language.

Subject of study of the educational component includes Romanian language as a system of linguistic means and rules for their use in the process of elementary oral and written communication, covering phonetic, lexical and grammatical features, as well as basic speech patterns of everyday and social communication.

Interdisciplinary connections: «English for Specific Purposes», «Ukrainian for Specific Purposes», «Health and Safety, Basics of Labor Protection and Medical Aid», «Ethics and Religious Tolerance in Multinational Crews».

The educational component program consists of the following modules:

Module 1

1. Introductions. Polite phrases. The alphabet. Reading rules.
2. Personal information. My family.
3. Days of the week, time, months, seasons, weather. Numerals.

Module 2

1. My home; things in the house.
2. My working day.
3. My leisure time and hobbies.

Assessment methods

- Test control
- Written control works
- Interviews based on covered topic materials
- Written frontal questioning of students

- Frontal, individual, and combined oral questioning
- Express control
- Verification of independent work assignments

Final assessment – credit in written form.

Learning resources

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Assessment

The final grade for studying the educational component is calculated using the following categories.

Control during the semester								Module 3 – Individual Assignment (IA)	Final assessment (credit)	Total points
Module 1				Module 2						
Topic 1	Topic 2	Topic 3	MW 1	Topic 1	Topic 2	Topic 3	MW 2			
For full-time form of education: – Activity during classes (response during oral frontal questioning, during discussion of the lesson topic, etc.) – 8; – Current control works (verification of theoretical material mastery) – 12; – Completion of independent work assignments – 20; – Module work № 1 – 10; – – Module work № 2 – 10.								Not provided by educational program and curriculum	40	100
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