



Syllabus of the educational component

Program of educational discipline

Regional technogenic and industrial safety in the context of sustainable development

Code and name of specialty

263 Civil Security

Institute

Institute of Education and Science of Mechanical Engineering and Transport

Educational program

Occupational safety and health

Department

Occupational and Environmental Safety (144)

Level of education

Master's level

Type of discipline

Profiled discipline package 01 "Labor protection"

Semester

2

Language of teaching

English, Ukrainian

Lecturers and course developers



Natalia TVERDOKHLIEBOVA

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PhD, Associate Professor, Associate Professor of the Department of Occupational and Environment Safety of NTU "KhPI".

The author and co-author of more than 220 scientific, educational and methodical publications. Leading lecturer on the courses: "First emergency premedical aid in emergency situations", "Technology and engineering for sustainable development", "Professional and psychological training of a modern specialist". <https://www.kpi.kharkov.ua/ukr/>

General information, number of publications, main courses, etc.

More information about the teacher on the website of the department

<https://web.kpi.kharkov.ua/safetyofliving/en/main/>

General information

Abstract

The course covers issues related to the application of the modern system of special knowledge on the organization of technogenic safety in Ukraine and the implementation of this knowledge in the theoretical and practical activities of specialists in the direction of master's training in the specialty 263 - Civil Security, educational program - Occupational safety and health.

Course objectives and goals

The formation of knowledge about technogenic and industrial safety; a clear understanding of the basic laws of formation of technogenic and industrial safety and safety management in the context of

Regional technogenic and industrial safety in the context of sustainable development



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sustainable development; acquisition of practical skills and abilities to ensure technogenic and industrial safety.

Format of classes

Lectures, practical classes, consultations, self-study. Final control in the form of an exam from the discipline.

Competences

CG 7. Ability to generate new ideas (creativity).

CC 2. The ability to preventive and operational (emergency) planning, management of professional safety measures.

CC 4. The ability to apply innovative approaches and modern methods aimed at regulating industrial and occupational safety.

CC 7. The ability to organize and conduct monitoring of certain objects, phenomena and processes, analyze its results and develop scientifically sound recommendations based on the data obtained.

Learning outcomes

LO 6. Identify and analyse possible threats of an emergency, accident, or industrial accident and assess possible consequences and risks.

LO 13. Assess the compliance of legal, organizational, technical measures to ensure industrial and occupational safety with the requirements of the law in the course of professional activities.

LO15. Analyse and evaluate the state of civil protection, industrial and technological safety of facilities, buildings, structures, and engineering networks.

LO 16. Make effective decisions in complex and unpredictable conditions, define goals and objectives, analyse and compare alternatives, and evaluate resources.

Scope of the discipline

The total volume of the discipline is 120 hours (5 ECTS credits): lectures – 32 hours, practical work – 16 hours, independent work – 72 hours.

Features of the discipline, methods and technologies of education

Lectures are held interactively with the use of multimedia technologies. Practical classes use a project-based approach to learning, methods and forms of activation cognitive activity of students, attention is focused on the application of information technologies in labor safety studies.

Program of the course

Lecture topics

Topic 1. Regulatory and legal support of industrial safety in Ukraine.

Legal and regulatory documents on industrial safety. The system of technogenic safety of objects: structure and directions of its provision.

Topic 2. The concept of sustainable development.

Approaches to production optimization. Sustainable use of resources.

Topic 3. Features of the organization of industrial safety at potentially dangerous facilities.

Requirements of regulatory acts on the organization of industrial safety at potentially dangerous facilities. Identification of a potentially dangerous facility. Typology of accidents at potentially dangerous facilities.

Topic 4. Identification characteristics of high-risk objects.

Identification is one of the main components of ensuring the safety of high-risk facilities. Methodological provisions for identification of high-risk objects.

Topic 5. Features of the organization of industrial safety at high-risk facilities.

Requirements of regulatory acts on the organization of industrial safety at high-risk facilities. The main directions of ensuring the technogenic safety of high-risk objects.

Topic 6. Subsystem of prevention of accidents and emergencies of an industrial nature.

Industrial accidents, disasters and their consequences. Conditions of accident spread. Limiting the amount of dangerous substances and materials in production. Protection of production facilities and warehouses from overloading with dangerous substances.

Topic 7. Subsystem of localization and elimination of accidents and emergencies.

Determination of categories and groups of dangerous substances. Determination of total masses of categories and groups of dangerous substances.

Determination of the standard for threshold masses of dangerous substances, taking into account the distances to vital facilities.

Topic 8. Subsystem of response to industrial emergencies.

Principles of ensuring technological safety. Organizational protection. Basic practical principles of environmental safety.

Topic 9. Analysis of production risk.

Production risks and industrial safety. General principles of organization and implementation of measures to reduce risk and limit damage in case of emergency at an industrial enterprise. Methods of assessing technological risk.

Topics of the workshops

Topic 1: Identification of man-made dangers in Ukraine.

Topic 2: Types and features of dangers. Technogenic dangers and their impact factors by genesis and mechanism of influence.

Theme 3: Determination of the level of threats to the regions of Ukraine.

Topic 4: Factors of man-made explosions that lead to human injury, destruction of buildings, structures, technical equipment.

Topic 5: Analysis of the environmental impact of solid household and industrial waste.

Topic 6: Ways to improve the level of technogenic and industrial safety at the regional level.

Topic 7: Danger risk analysis.

Topics of the laboratory classes

Laboratory work within the discipline is not provided.

Independent work

Additional materials (textbooks) are recommended to students for independent study and analysis of issues submitted for independent study. The results are drawn up in an abstracts, presentations.

Literature and study materials

Basic literature

Strategies of sustainable development: a textbook / V. Dobrovolsky, E. Bezsonov, H. Nepeina, D. Krysinska, N. Serbulova - Mykolaiv: Petro Mohyla National University of Mykolaiv, 2021. 160 p. https://dspace.chmnu.edu.ua/jspui/handle/123456789/509
The current state of regional security in the Eurasian space: a study guide / E.V. Ryabinin. - Mariupol, 2020. - 204 p. http://repository.mdu.in.ua/jspui/handle/123456789/2583
Yanchyk O. G. Occupational safety in professional activity. Part II. Ensuring technogenic safety and safe working conditions: a textbook for students of the second (master's) level in the field of knowledge under codes: 01, 03, 05, 06, 07, 10-18, 25-29 / O. Yanchyk, V. Raiko, Y. Petrenko, M. Pastukhov, A. Korniychuk, O. Ilyinska - Kharkiv: NTU "KhPI", 2020. 316 p. repository.kpi.kharkov.ua/bitstream/KhPI-Press/47119/1/Book 2020 Yanchyk Bezpeka pratsi.pdf
Methodical instructions for independent work in the discipline "Regional technogenic and industrial safety in the context of sustainable development" [Electronic resource] : for students of the educational qualification level "master", specialty 26 "Civil safety", educational professional program "Labor protection", specialty. 263 "Civil Safety", specialization 263-1 "Labor Protection" / compiled by N. E. Tverdokhlebova, N. S. Yevtushenko ; National Technical University "Kharkiv Polytechnic Institute." - Electronic text data - Kharkiv, 2023. 12 p. http://repository.kpi.kharkov.ua/handle/KhPI-Press/61998

Additional literature

Methodical instructions for practical classes in the course "Regional technogenic and industrial safety in the context of sustainable development" : for full-time and part-time students majoring in 263 - Civil Safety, specialization 263.1 - Occupational Safety / comp. Y. A. Petrenko [et al: NTU "KhPI", 2019. 39 p. https://repository.kpi.kharkov.ua/handle/KhPI-Press/40934
Methodical instructions for performing control work in the discipline "Regional technogenic and industrial safety in the conditions of sustainable development" [Electronic resource] : for part-time students of the educational qualification level "master", specialty 26 "Civil safety", educational professional program "Labor protection", specialty. 263 "Civil Safety", specialization 263-1 "Labor Protection" / compiled by N. E. Tverdokhlebova, N. S. Yevtushenko ; National Technical University "Kharkiv Polytechnic Institute." - Electronic text data - Kharkiv, 2023. 12 p. http://repository.kpi.kharkov.ua/handle/KhPI-Press/62004
Sustainable Development Strategy "Ukraine - 2020". Decree of the President of Ukraine of January 12, 2015 - No. 5/2015: [electronic resource]. - Access mode: http://zakon5.rada.gov.ua/laws/show/5/2015
Order of the Ministry of Internal Affairs of Ukraine of 05.11.2018 No. 879 "On Approval of the Rules of Technogenic Safety": [Electronic resource] - Access mode: https://zakon.rada.gov.ua/laws/show/z1346-18#Text

Assessment and grading

Criteria for assessing the student's success and distribution of points

100% of the final grade consists of assessment results in the form of credit (40%) and current assessment (60%).
Assessment: written assignment (2 questions from theories + problem solving) and an oral report.
Current assessment:
2 online tests (20% each), practical work (40%).

Assessment scale

The sum of the points	National assessment	ECTS
90-100	Excellent	A
82-89	Good	B
75-81	Good	C
64-74	Satisfied	D
60-63	Satisfied	E
35-59	Unsatisfactorily (further study required)	FX
1-34	Unsatisfactorily (needs repeated study)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, education, benevolence, honesty, responsibility. Conflict situations should be openly discussed in academic groups with the lecturer, and if it is impossible to resolve the conflict, it should be brought to the attention of the Institute's management.
Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

Approval

Approved by

Date, signature
prot. №2
20.09.2023

Head of the Department
Sergij VAMBOL

Date of approval, signature
20.09.2023

Guarantor of the educational
program
Viacheslav BEREZUTSKYI