



## **CERTIFICATION AND CONTROL OF ENVIRONMENTAL PROTECTION**

### **Work program of the educational component (Syllabus)**

#### **Details of the educational component**

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Higher education level</b>                         | <b>Second (Master's)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Field of Knowledge</b>                             | <i>G Engineering, Manufacturing and Construction</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Speciality</b>                                     | <i>G1 Chemical Technology and Engineering</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Educational program</b>                            | <i>Resource-efficient clean technologies</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Status of the educational component</b>            | <i>Custom</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Form of study</b>                                  | <i>full-time (full-time)/remote/mixed</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Year of preparation, semester</b>                  | <i>1st year, spring semester</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Scope of the educational component</b>             | <i>5 credits (150 hours)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Semester control / control measures</b>            | <i>Exam/Modular Test Work</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Class schedule</b>                                 | <i>3.07 hours per week (2 hours of lectures and 1.07 hours of practical classes)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Language of instruction</b>                        | <i>Ukrainian</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Information about the course leader / teachers</b> | <b>Speaker:</b> <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi/nosachova-yuliya-viktorivna.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi/nosachova-yuliya-viktorivna.html</a><br><b>Practice:</b> <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi/nosachova-yuliya-viktorivna.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi/nosachova-yuliya-viktorivna.html</a><br><b>Speaker:</b> <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi/shabliij-tetyana-oleksandrivna.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi/shabliij-tetyana-oleksandrivna.html</a> |
| <b>Course placement</b>                               | <a href="https://do.ipk.kpi.ua/course/view.php?id=6069">https://do.ipk.kpi.ua/course/view.php?id=6069</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### **Program of the educational component**

##### **1. Description of the educational component, its purpose, subject of study and learning outcomes**

*The subject of the educational component is the implementation of measures that improve the conditions and quality of human life, control and inspection of production activities, which will help encourage entrepreneurs to develop and implement environmentally friendly technologies in order not only to increase competitiveness, but also to reduce negative environmental consequences.*

*The purpose of studying this educational component is to form in students a set of knowledge, skills, and abilities necessary to control and assess the degree of environmental safety of economic activity and the environmental situation that has developed at objects (territories); prevention and termination of the negative impact of a certain type of anthropogenic activity on human health and the environment; identification of priorities for solving environmental problems and preparation of substantiated environmental and economic recommendations on the strategy and tactics of solving environmental problems.*

*In accordance with the goal, the training of masters requires strengthening students' competencies:*

- *ability to organize work related to the assessment of the ecological state, environmental protection and optimization of nature management (FC 14);*

*According to the requirements of the educational and professional program, students after mastering the educational component must demonstrate the following learning outcomes:*

- *demonstrate awareness of the latest principles and methods of environmental protection (PRN 10);*
- *know modern approaches to the organization of environmentally friendly production, reorganization and reconstruction of existing industries from the standpoint of resource saving (PRN 12).*

**Pre-requisites and post-requisites of the educational component (place in the structural and logical scheme of education according to the relevant educational program)**

*The educational component "Certification and Control of Environmental Protection" is preceded by educational components studied in the bachelor's degree. The educational component "Certification and Control of Environmental Protection" provides the defense of a master's thesis.*

**2. CONTENT OF THE EDUCATIONAL MATERIAL**

**Part I**

**Chapter 1. Regulatory and legal framework of expertise on compliance with environmental protection legislation.**

*Topic 1. General characteristics of the State bodies of control over compliance with environmental legislation in production*

*Topic 2. Conducting inspections on environmental protection*

*Topic 3. Detection of violations and application of measures of influence to violators of environmental legislation*

*Topic 4. Cases of detection of facts of violation of environmental legislation. Registration (fixation) of the fact of violation. Procedure for applying measures of influence.*

*Topic 5. Seizure of Instruments of Illegal Extraction (Procurement) of Natural Resources, Natural Resources and Products Produced from Them*

**Section 2. Types and methods of inspections of production facilities for environmental protection.**

*Topic 6. Inventory of pollutant emissions at the enterprise and report on it*

*Topic 7. Environmental control over the state of atmospheric air*

*Topic 8. Environmental control over the state of water resources and water use in production*

*Topic 9. Environmental control over the impact of livestock complexes on water bodies*

*Topic 10. Implementation of state control over the transportation, storage and use of pesticides and mineral fertilizers*

*Topic 11. Organization of border environmental control.*

**Part II**

**Chapter 3. Standardization**

*Topic 6. Theoretical and Legal Foundations of Standardization*

*Topic 7. Organization of work on standardization and requirements for the content of regulatory documents*

*Topic 8. International activities in the field of environmental standardization*

*Topic 9. Environmental standardization*

**Chapter 4. Certification**

*Topic 10. Certification as a means of ensuring quality of life*

*Topic 11. Types, bodies and functions of the certification system. Rules and procedure for certification*

*Topic 12. Accreditation of conformity assessment bodies*

*Topic 13. National certification systems in economically developed countries*

*Topic 14. Certification of subjects, objects and systems. International cooperation*

**Training materials and resources**

**Basic**

1. Klymenko M.O., Pryshchepa A.M., Stetiuk L.M., Brezhytska O.A. Ecological inspection. Kherson: Oldie+, 2020. 400 p. (in Russian).

2. Environmental inspection. Textbook on practical (seminar) classes [Electronic resource]: study. Manual. for students. specialties 101 "Ecology" OP "Environmental Safety", 161 "Chemical Technologies and Engineering" OP "Industrial Ecology and Resource-Efficient Clean Technologies" / KPI. Igor Sikorsky;

compiled by: Y. V. Nosacheva, T. O. Shabliy. – Electronic text data (1 file: 2.40 MB). – Kyiv: KPI. Igor Sikorsky, 2020. – 230 p. (in Russian).

3. Metrology, standardization, certification and accreditation: textbook / Myroslava Petrovska. – Lviv: Ivan Franko National University of Lviv, 2020. – 408 p.

4. Standardization, metrology, certification and quality management: Textbook / L.V. Bal-Prylypko, N.M. Slobodanyuk, G.E., Polishchuk, M.Z. Paska, V.G. Burak. - Kyiv: CP "Komprint" - 2017. - 573 p.

5. Salavelis, A.D., Pavlovsky S.M. Standardization, Metrology and Certification : Textbook. - K. Oldie+, 2023. – 212 p.

### **Secondary**

1d. Regulations on the State Environmental Inspectorate. – Approved by the Resolution of the Cabinet of Ministers of Ukraine in the edition of June 16, 2004, No. 770.

2d. Regulations on the State Environmental Inspectorate in the regions, cities of Kyiv and Sevastopol. – Approved by the Order of the Ministry of Natural Resources of Ukraine dated December 19, 2006, No. 548.

3d. Regulations on the State Environmental Inspectorate of the Sea of Azov. – Approved by the Order of the Ministry of Natural Resources of Ukraine dated February 23, 2004, No. 64.

4e. Procedure for organizing and conducting inspections of business entities for compliance with the requirements of environmental legislation. – Approved by the Order of the Ministry of Environment and Natural Resources of September 10, 2008, No. 464.

5e. Methodological recommendations "On the procedure for conducting inspections on compliance by nature users with the requirements of the legislation on environmental protection". – Approved by the Order of the Main Environmental Inspectorate of the Ministry of Natural Resources of March 28, 1994, No. 7.

6e. Procedure for restriction, temporary prohibition (suspension) or termination of activities of enterprises, institutions, organizations and facilities in case of violation of legislation on environmental protection. – Approved by the Resolution of the Verkhovna Rada of October 29, 1992, No. 2751 – XII.

7e. List of activities related to environmental protection measures. – Approved by the Resolution of the Cabinet of Ministers of Ukraine as amended on December 17, 2004, No. 1700.

8e. Law of Ukraine "On Atmospheric Air Protection". – Collection of Legislative Acts: Legislation of Ukraine on Environmental Protection. – Kyiv, Parliamentary Publishing House. – 2006, pp. 79-95.

9d. Law of Ukraine "On Land Protection". – Collection of legislative acts: Legislation of Ukraine on environmental protection. – Kyiv, Parliamentary Publishing House. – 2006, pp. 96-119.

10e. Law of Ukraine "On State Control over the Use and Protection of Land". – Collection of legislative acts: Legislation of Ukraine on environmental protection. – Kyiv, Parliamentary Publishing House. 2006, pp. 120-129.

11e. Regulations "On Establishing the Levels of Harmful Effects of Physical and Biological Factors on the Atmospheric Air". – Approved by the Resolution of the Cabinet of Ministers of Ukraine dated December 31, 1993, No. 1092.

12e. Instruction "On the Content and Procedure for Compiling a Report on the Inventory of Pollutant Emissions at the Enterprise". – Approved by the Order of the Ministry of Natural Resources of February 10, 1995, No. 7.

13e. Instruction "Requirements for the placement and equipment of sampling sites from gas and dust streams". "Ibid. – P. 214-216.

14e. Regulations "On Conducting Operation "Clean Air". –There. Same. – P. 176-188.

15e. Instruction "On Water Sampling". "Ibid. – P. 217-220.

16e. Procedure for planning and conducting inspections on the implementation of state control over the use and protection of land. – Approved by the Order of the State Committee on Land Resources of December 12, 2003, No. 312.

17e. *Instruction on the preparation of materials on administrative offenses by state inspectors for control over the use and protection of lands of the State Land Inspectorate and its territorial bodies.* – Approved by the Order of the State Committee on Land Resources of April 28, 2009, No. 205.

18e. *The procedure for establishing the standards of the fee for environmental pollution and the collection of this fee.* – Approved by the Resolution of the Cabinet of Ministers of Ukraine dated March 1, 1999, No. 303.

19e. *Instruction on the procedure for calculating and paying the fee for environmental pollution.* – Approved by the Order of the Ministry of Natural Resources and the State Tax Administration of July 19, 1999, No. 544/3837.

20e. *Methodology for calculating the amount of compensation for damages caused to the state as a result of violation of the legislation on the protection and rational use of water resources.* – Approved by the Order of the Ministry of Natural Resources of Ukraine dated July 20, 2009, No. 389.

21e. *Legislation of Ukraine on Environmental Protection. Collection of legislative acts.* – Kyiv, Parliamentary Publishing House, 2006. – 200 p. (in Russian).

22e. *Rules for the technical operation of gas purification units, approved by the Order of the Ministry of Environmental Protection of Ukraine No. 52 dated February 6, 2009, registered with the Ministry of Justice of Ukraine on April 13, 2009 under No. 327/16343*

23e. *Methodology for determining the amount of damage caused to land, soils as a result of emergencies and/or armed aggression and hostilities during martial law.* Order of the Ministry of Environmental Protection and Natural Resources of Ukraine dated April 04, 2022 No. 167.

24d. *Topolnyk, V. G. Metrology, standardization, certification and quality management.* / V. G. Topolnyk, M. A. Kotlyar. – Lviv: Magnolia Publishing House, 2006, 2015. – 216 p.

25d. *Metrology and standardization: teaching aids for students of higher education* / R. M. Trishch, D. A. Yanushkevych, M. V. Moskalenko, O. E. Maletskaya. – Kharkiv: [b. v.], 2014. – 444 p.

26d. *Ofilenko, N. O. Labeling of goods in Ukraine and abroad [Text] : educational and methodological manual* / N. O. Ofilenko. – Poltava: PUET, 2019.

27d. *Metrology, standardization, certification in construction: questions and answers: textbook [Electronic resource]* / V. R. Serdyuk. – Vinnytsia: VNTU, 2018, (PDF, 162 p.)

28d. *Polishchuk E. S., Dorozhovets M. M., Yatsuk V. O. Metrology and Measuring Equipment.* – Lviv, 2012. – 544 p.

## **Educational content**

### **5. Methods of mastering the educational component**

#### **Lectures**

*Lectures are aimed at:*

- *providing modern, holistic, interdependent knowledge on the educational component "Certification and Control of Environmental Protection", the level of which is determined by the target setting for each specific topic;*
- *ensuring the creative work of students together with the teacher during the lecture;*
- *education of students' professional and business qualities and the development of independent creative thinking;*
- *formation of students' necessary interest and provision of direction for independent work;*
- *determination of the development of science and technology in the field of environmental protection at the current level, forecasting their development for the coming years;*

- reflection of methodological processing of the material (highlighting the main provisions, conclusions, recommendations, clear and adequate to their formulation);
- use of visual materials for demonstration, combining, if possible, them with the demonstration of results and samples;
- presentation of research materials in a clear and high-quality language in compliance with structural and logical connections, explanation of all newly introduced terms and concepts;
- accessibility for perception by this audience.

| No. s/p       | Title of the topic of the lecture and a list of main questions (list of didactic tools, references to literature and tasks on the SRS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Number of hours |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Part I</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |
| 1             | <p><b>General characteristics of the State bodies of control over compliance with environmental legislation in production</b></p> <p>General information about state environmental control bodies. Powers and rights of the State (Main) Environmental Inspectorate (State Environmental Inspectorate). Powers of the State Environmental Inspectorate. Rights of the State Environmental Inspectorate. Powers and rights of the State Environmental Inspectorates in the regions, the city of Kyiv (hereinafter referred to as the Inspectorates). Powers of inspections. Rights of inspections. Inspection Management.</p> <p><b>References:</b> [1], [1d]Art. 10-12, Art. 8-10.</p> <p>Task at the SRS – To consider the competence of state bodies of local self-government in the field of environmental protection 1d.</p>                                                                                                                                                                                                                                                                                                                                         | 1               |
| 2             | <p><b>Conducting inspections on environmental protection</b></p> <p>Forms Notification of scheduled inspection and referral for inspection. Start of the check. Progress of the check. Registration of the inspection. Forms of inspection documents (Act of verification of compliance with the requirements of environmental legislation, Order, Application for issuance, suspension or cancellation of a permit, limit, quota).</p> <p><b>References:</b> [1]p.62-88; [4d]</p> <p>Tasks for the SRS – Powers possessed by public inspectors for the protection of NPS. To consider the forms of statistical reporting of economic objects on the protection of NPS [1] Article 46-61, [4e]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1               |
| 3             | <p><b>Detection of violations and application of measures of influence to violators of environmental legislation</b></p> <p>Cases of detection of facts of violation of environmental legislation. Registration (fixation) of the fact of violation. The procedure for applying measures of influence.</p> <p><b>Seizure of Instruments of Illegal Extraction (Procurement) of Natural Resources, Natural Resources and Products Produced from Them</b></p> <p>Seizure of tools for illegal extraction (procurement) of natural resources. Seizure of illegally extracted (harvested) natural resources or products produced from them. Storage of seized tools of illegal extraction (procurement) of natural resources, floating facilities, weapons and ammunition. Storage of illegally extracted (harvested) natural resources or products produced from them. Sale of illegally extracted (procured) natural resources or products produced from them.</p> <p><b>References:</b> [1]pp. 72-76; 6d,, 21d</p> <p>Task on the SRS – To characterize the procedure for the extraction of illegally extracted natural resources or products produced from them [6e]</p> | 1               |
| 4             | <p><b>Inventory of pollutant emissions at the enterprise and report on it</b></p> <p>What regulates the inventory and reporting? Basic terms and their definitions. The procedure for conducting an inventory. Content of the report. Appendices to the instruction</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1               |

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|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|               | <p>"On the content and procedure for compiling a report on the inventory of pollutant emissions at the enterprise".</p> <p><b>References:</b> [12e] p. 75-91, [8e]</p> <p>Task on the CPS – To analyze the methods for determining pollutants at the enterprise [12d]Art. 64-65, 96-99, [8e]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
| 5             | <p><b>Environmental control over the state of atmospheric air</b></p> <p>Features of inspections of stationary and mobile sources of pollution. Main violations of the legislation on atmospheric air protection.</p> <p><b>References:</b> [1]p. 264-290; [8d]Art. 91-100; [14d].</p> <p>The task of the SRS is to characterize the criteria for standardizing the quality of the environment in the field of atmospheric air protection [13 e].</p>                                                                                                                                                                                                                                                                                                                                                                                                                | 2 |
| 6             | <p><b>Environmental control over the state of water resources and water use in production</b></p> <p>Inspection of potential sources of pollution of surface and groundwater and the general sanitary condition of the territory of the facility. How water protection inspections are carried out Features of checking reclamation systems. Main violations in the field of water legislation.</p> <p><b>References:</b> [1] p. 145-171; [15e] Articles 91-100.</p> <p>Task on the SRS – Characterize the ownership of water [20d]</p>                                                                                                                                                                                                                                                                                                                              | 2 |
| 7             | <p><b>Environmental control over the impact of livestock complexes on water bodies</b></p> <p>Features of water pollution by livestock complexes. Water supply of complexes and water consumption rates. Basic manure processing schemes. General information. Manure processing at pig breeding complexes. Manure treatment on cattle complexes. Objects of inspection at livestock complexes. Information on the object. Status of water supply. Drainage condition. Manure treatment and storage, wastewater disposal. Emergency pollution. Registration of the results of the inspection.</p> <p><b>References:</b> [21d]p.102-110, [19e]</p> <p>Tasks on the SRS: Manure treatment on cattle complexes – [21d] Art. 107</p>                                                                                                                                     | 2 |
| 8             | <p><b>Implementation of state control over the transportation, storage and use of pesticides and mineral fertilizers</b></p> <p>Definition of the concept of "pesticides", a group of pesticides. Checking the storage of pesticides and mineral fertilizers. Inspection of the transportation of pesticides and mineral fertilizers. Verification of the application of pesticides and mineral fertilizers. The procedure for conducting a comprehensive inventory of places of accumulation of prohibited and unsuitable for use in agriculture of chemical plant protection products.</p> <p><b>References:</b> [1]p. 331-333</p> <p>Task on the SRS – To characterize the procedure for conducting a comprehensive inventory of places of accumulation of unknown, prohibited and unsuitable for use in agriculture chemical plant protection products [12e]</p> | 2 |
| 9             | <p><b>Organization of border environmental control.</b></p> <p>Conceptual foundations of state environmental control at the border. The main tasks of the environmental control service at the border. Goods and shipping documents subject to border environmental control. Border environmental control of dangerous goods and waste. Radiation border control. Control levels.</p> <p><b>References:</b> [1]p. 311-361</p> <p>The task of the SRS is to characterize the procedure for conducting border environmental control of flora and fauna.</p>                                                                                                                                                                                                                                                                                                            | 2 |
| <b>Part 2</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |
| 10            | <p><b>Theoretical and Legal Foundations of Standardization</b></p> <p>The essence, principles, purpose and objectives of standardization. Types of standardization and standards. Legal basis of standardization. Basic concepts and their definitions</p> <p><b>References:</b> [3, 4, 5]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2 |

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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | <i>Tasks on the CPC – The concept of a set of standards.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
| 11 | <p><b>Organization of work on standardization and requirements for the content of regulatory documents</b></p> <p>Organization of standardization work. Regulatory documents and the procedure for their development. Rules for designating regulatory documents. Content of standards and technical specifications.</p> <p><b>References:</b> [3, 4, 5]</p> <p>Tasks on the SRS – Content of fundamental organizational and methodological standards.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2 |
| 12 | <p><b>International activities in the field of environmental standardization. Environmental standardization</b></p> <p>International and European organizations for standardization. International and European standards for quality and environmental protection. Development of international standards. Ukraine's participation in international activities in the field of environmental standardization.</p> <p><b>References:</b> [3, 4, 5]</p> <p>Tasks on the SRC – Preparatory stage of the international standard.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2 |
| 13 | <p><b>Environmental standardization.</b></p> <p>System of environmental standards. System of standards for environmental protection. Environmental Management Standards System. Eco-labeling.</p> <p><b>References:</b> [3, 4, 5]</p> <p>Tasks on CPS – Bar coding</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 |
| 14 | <p><b>Certification as a means of ensuring quality of life.</b></p> <p>The essence of conformity confirmation works. The emergence and development of certification. Certification of goods on the European market. Certification of products at the stage of design, development of technology and production. Certification of serial products at the production stage. Procedure for confirmation of compliance by CIS member countries.</p> <p><b>References:</b> [3, 4, 5]</p> <p>The task for the CPC is the Set of Standards "National Standardization".</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 |
| 15 | <p><b>Types, bodies and functions of the certification system.</b></p> <p>Rules and procedure for certification. Types of certification. Organs and systems of ceremonies. General scheme, rules and procedure for certification.</p> <p><b>References:</b> [3, 4, 5]</p> <p>Tasks at the CPC – Certification of environmental management systems. Quality management. Certification system UkrSEPRO.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 |
| 16 | <p><b>Accreditation of conformity assessment bodies</b></p> <p>The role of accreditation in the modern world. International standards applied in the accreditation process. Accreditation of bodies that accredit conformity assessment bodies (ISO/IEC 17011). Accreditation of control bodies (ISO/IEC 17020). Accreditation of audit bodies and certificate of management systems (ISO/IEC 17021). Accreditation of personnel certification bodies (ISO/IEC 17024). Accreditation of testing and calibration laboratories (ISO/IEC 17025). Accreditation of proficiency testing and interlaboratory comparisons (ISO/IEC 17043). Accreditation of product certification bodies (ISO/IEC 17065). International organizations operating in the field of accreditation. International Accreditation Forum (IAF). International Organization for Cooperation in the Field of Accreditation of Laboratories and Control Bodies (ILAC). European Association for Accreditation (EA). Participants of accreditation works in Ukraine. Their main functions. Procedure for accreditation of business entities in Ukraine.</p> | 2 |

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|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|    | <b>References:</b> [3, 4, 5]<br><i>Tasks for the CPC – International practice of organizing activities in the field of certification and accreditation.</i>                                                                                                                                                                                                                                                                                                                                                                                    |    |
| 17 | <b>National certification systems in economically developed countries. International cooperation</b><br><i>National Certification System of France. German National Certification System. US National Certification System. Japan National Certification System.</i><br><b>References:</b> [3, 4, 5]<br><i>The task of the CPC is Environmental certification in Western European and Eastern countries.</i>                                                                                                                                   | 1  |
| 18 | <b>Certification of subjects, objects and systems. International cooperation.</b><br><i>Personnel certification. Environmental certification of territories. Quality management systems and environmental management systems: implementation in the world and in Ukraine. International cooperation in the field of technical regulation of society. Activities of Ukrainian technical committees. Cooperation at the world level.</i><br><b>References:</b> [3, 4, 5]<br><i>Tasks on the SRS – Ways to certify the fact of certification.</i> | 1  |
|    | <b>Just:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 30 |

### Practical classes

In the system of professional training of students in this educational component, practical classes occupy 34.7% of the classroom load. As a supplement to the lecture course, they lay and form the foundations for the qualification of masters in chemical technology and environmental engineering. The content of these classes and the methodology of their conduct should ensure the development of creative activity of the individual. They develop scientific thinking and the ability to use special terminology, allow you to test knowledge, so this type of work is an important means of prompt feedback. Practical classes should perform not only cognitive and educational functions, but also contribute to the growth of students as creative workers in the field of environmental protection.

The main tasks of the cycle of practical classes:

- to help students systematize, consolidate and deepen theoretical knowledge in the field of modern principles of the formation of urban ecosystems;
- to teach students techniques for solving practical problems, to promote the acquisition of skills and abilities in performing calculations, graphic and other tasks;
- to teach them to work with scientific and reference literature and regulatory documents;
- to form the ability to learn independently, that is, to master the methods, ways and techniques of self-study, self-development and self-control.

| No. s/p | Name of the topic of the lesson and a list of main questions<br>(list of didactic support, references to literature and tasks on the SRS)                                                                                                                                                                                                                                                                                                                                                                                                                                       | Number of hours |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1       | <b>Calculation of the amount of compensation for damages caused to the state as a result of excess emissions of pollutants into the atmosphere</b><br>- calculations of excess emissions of pollutants into the atmosphere are given;<br>- the procedure for determining excess emissions of pollutants into the atmosphere is considered;<br>- the amount of compensation for excess emissions of pollutants into the atmosphere is given.<br><b>References:</b> [2], art.[ 28e]<br><i>Tasks on the SRS. Rules for the technical operation of gas purification units.[28e]</i> | 4               |
| 2       | <b>Calculation of the amount of compensation for damages caused to the state as a result of violation of the legislation on the protection and rational use of water resources</b>                                                                                                                                                                                                                                                                                                                                                                                              | 4               |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|   | <p><i>Pollution of water bodies by excess discharges of pollutants into a water body with return waters. Calculation of the mass of excess discharge of pollutants into a water body with return waters. Calculation of the mass of oil and petroleum products discharged into a water body as a result of a leak or spill.</i></p> <p><i>References: [2], pp. 7-19, [27]</i></p> <p><i>Tasks on the SRS. Calculation of the mass of oil based on expert estimates. [2]</i></p>                                                     |    |
| 3 | <p><b>Calculation of the amount of the fee for pollution of NPS</b></p> <p><i>Determination of the amount of compensation for damages caused to the state as a result of unauthorized use of subsoil. Calculation of emissions of pollutants into the atmosphere from motor vehicles. Calculation of the fee for environmental pollution.</i></p> <p><i>References: [2] Art. 69 - 74</i></p> <p><i>Tasks on the SRS. Determination of damages in the absence of a permit for the release of substances into the atmosphere.</i></p> | 4  |
| 4 | <p><b>Determination of the amount of damage caused by pollution and littering of land resources due to violation of environmental legislation</b></p> <p><i>References: [2], pp. 47-60</i></p> <p><i>Tasks on the SRS. Determination of the amount of damage caused to land resources as a result of hostilities. [29e]</i></p>                                                                                                                                                                                                     | 2  |
| 5 | <b>Modular control work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2  |
|   | <b>Just</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 16 |

## 6. Independent work of a student

Independent work takes 69.3% of the time to study the educational component, including preparation for the MCR and test, as well as the implementation of the RWD. The main task of students' independent work is to master scientific knowledge in areas that are not included in the list of lecture questions through personal search for information, the formation of an active interest in a creative approach in educational work. In the process of independent work within the framework of the educational component, the student must learn to deeply analyze modern approaches to the development and implementation of the latest approaches to monitoring compliance with the requirements of environmental legislation in the implementation of production activities.

| No. s/p                                                                                                               | Name of the topic submitted for independent study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Number of CPC hours |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part I                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |
| <b>Chapter 1. Regulatory and legal framework of expertise on compliance with environmental protection legislation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |
| 1                                                                                                                     | <p><i>Get acquainted with the main legislative acts in various areas of environmental protection. To consider the competence of state bodies of local self-government in the field of environmental protection.</i></p> <p><i>References: 1d -6d.</i></p> <p><i>Powers possessed by public inspectors for the protection of NPS. To consider the forms of statistical reporting of economic facilities on the protection of NPS</i></p> <p><i>References: [1] p.46-61, [5e]</i></p> <p><i>Consider what legislative acts the state inspector is guided by when drawing up the protocol</i></p> <p><i>References: [5d, 6d]</i></p> | 15                  |

|                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|                                                                                                          | <p><i>To characterize the procedure for the extraction of illegally extracted natural resources or products produced from them</i><br/>References: [6e] p. 120-122</p> <p><i>To characterize the criteria for regulating the quality of the environment in the field of atmospheric air protection.</i><br/>References: [13 d]</p> <p><i>To analyze the methods for determining pollutants at the enterprise</i><br/>References: [21d]pp. 64-65, 96-99, [16d], [18e]</p> <p><i>Characterize water ownership</i><br/>References: [27e].</p> <p><i>Manure treatment on cattle complexes.</i><br/>References: [21d] Art. 107</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |
| <b>Chapter 2. Types and methods of inspections of production facilities for environmental protection</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
| 3                                                                                                        | <p><i>Analyze legal documents in the field of land protection</i><br/>References: [20e], [23e]</p> <p><i>To characterize forest management in other countries</i><br/>Bibliography: [1], p.221</p> <p><i>Indicate the reasons for planning the shooting of wild animals</i><br/>Bibliography: [1], Art. 110-116</p> <p><i>To characterize the procedure for conducting a comprehensive inventory of places of accumulation of unknown, prohibited and unsuitable for use in agriculture chemical plant protection products</i><br/>References: [14e]</p> <p><i>Consider at whose expense the costs of laboratory tests are covered</i><br/>References: [7d] p.76</p> <p><i>Issuance, cancellation or termination of permits, limits and quotas.</i><br/>References: [24d, 25d, 27e]</p> <p><i>Analysis of regulatory documentation that regulates citizens' access to environmental information</i><br/>References: [27e]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 14 |
| Part II                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
| <b>Chapter 3. Standardization</b>                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
| 1                                                                                                        | <p><i>Standardization as an attribute of statehood. The concept of standardization. The purpose and main tasks of standardization. Levels of standardization. The concept of standard. The main objects of standardization. Subjects of standardization. Central body in the field of standardization in Ukraine. Functions of the central body in the field of standardization. The concept of the standard of the organization. The regulatory framework of the state system of standardization. The content of standards for products, services. State supervision over compliance with standards. Designation of national standards. The concept of guidelines, a set of rules. Code of established practice. The concept of technical conditions. Technical conditions, their difference from the standard. Designation of technical specifications. Content of standards on technical specifications. Content of standards for control methods. Concept of technical regulations. Concept of classifier. State classifiers. Indices of documents. Content of fundamental general technical standards. International Electrotechnical Commission. Main activities of the International Electrotechnical Commission. European standards and their series. Stage of approval in the preparation of an international standard. The first national organizations for standardization. Standardization</i></p> | 15 |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|                                 | <p>organizations in Europe. Preliminary stage of preparation of the international standard. The main tasks of ISO. Proposal stage in the preparation of an international standard. International standards ISO 9000 series. Preparatory stage of the international standard. ISO organizational structure. International standards ISO 14000 series. Discussion stage in the preparation of an international standard. Indicate the main groups that the system of environmental standards includes according to DK 004. Signs that are used to indicate the environmental friendliness of objects or their individual properties. Marking on safety and energy efficiency rules. Marking containers by type of material. Eco-labeling in Ukraine. Barcode structure. Environmental Management Standards System. System of standards for environmental protection. Main types and levels of national standards for environmental protection. Eco-label mark "Environmentally friendly and safe". ISO standards for environmental management. A cuckoo with a cmaxmy dovkiuu. System of ecological standards. A system of standards for the management of the superfluous ceremonies. A system of standards for the quality of O6 objects of the natural stage. Cucmena cmandapmi from bezneku niénpuencmv ma bezneku npaci. Professional safety and hygiene standards. Occupational safety standards and safety against noise and noise pollution. I'm going to try to get rid of the Electric Motorcycle. Cucmena cmandapmi in the field of dejaciũnoi bezneku. It's a safe haven and a safe haven. Safe operation and protection from ionizing changes. Safe and secure from infarction, ultraviolet and lazy changes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |
| <b>Chapter 4. Certification</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |
| 2                               | <p>Purpose of certification, its object and subject. The difference between the concepts of license, certificate and mark of conformity. to distinguish the concepts of "responsibility", "certificate of responsibility", "certificate of responsibility", "certificate of responsibility". Requirements for attestation of you. International certification organizations. Subjects of certification in Ukraine. Types of certification. Types of certification and their features. Subjects of certification abroad. Terms and definitions of concepts in the field of confirmation of conformity. Regulatory documents of Ukraine in the field of certification. Personnel certification. Environmental certification of territories. Quality Management Systems and Environmental Management Systems: Implementation in the World and in Ukraine. Activities of Ukrainian technical committees. Cooperation at the world level. Regional cooperation. As a matter of fact, it was the first time that the Spartans had a chance to win the Super Bowl. Trends in the development of Ukraine's activities in the ceptificii region. Knowledge and Language Development. As a result of his dedication and dedication to his legacy. Mapping of tows. Intrinsic signs of the subject. Ecological Perception and Ecological Labeling. Nature, purpose and o6'objects of ecological cerefactation. Ecological Certification in Western European Countries. Ecological Mapping. The main functions of certification bodies (national certification body – Gosstandart of Ukraine, scientific and technical commission, product certification bodies, quality system certification bodies, testing laboratories, auditors' staff, scientific, methodological and information center, territorial centers for standardization, metrology and certification, Ukrainian Educational and Scientific Center for Standardization, Metrology and Product Quality). Basic requirements for product certification bodies. Requirements for the documentation of the certification body. Procedure for accreditation of bodies and services and inspectors. The procedure for attestation of auditors and the procedure for cancellation of the certificate.</p> | 14 |
| 4                               | Preparation for the MCR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6  |

|   |                           |            |
|---|---------------------------|------------|
| 5 | Implementation of the RWD | 10         |
| 6 | Exam preparation          | 30         |
|   | <b>Just:</b>              | <b>104</b> |

### Individual tasks

According to the curriculum, the student must complete an individual task in the form of a homework test (OCD).

Independent work performs several educational functions at the same time. Firstly, the OCD covers in a more specific form those issues that were briefly considered by the teacher; secondly, the student gains skills in working with modern scientific literature and the ability to analyze a particular problem; thirdly, the student is aware of the responsibility for the effectiveness and consequences of the implementation of his work.

R&D should be based on the study of sources of basic and auxiliary literature, web resources. In addition, it is recommended to use monographs, special articles, textbooks for university students and periodicals as auxiliary literature.

### Tests

The purpose of the tests is to consolidate and test theoretical knowledge from the credit module, to acquire practical skills for independent problem solving. Two modular control works (MCR) are performed. Each student receives an individual task, to which written answers must be provided and sent.

#### Providing program results with components of the educational component

| Name of PR                                                                                                         | Lectures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Practical lessons, individual task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| possess the basics of environmental engineering design and environmental expert assessment of environmental impact | <p><u>Lecture</u>. General characteristics of the State bodies of control over compliance with environmental legislation in production</p> <p><u>Lecture</u>. Conducting inspections on environmental protection</p> <p><u>Lecture</u>. Detection of violations and application of measures of influence to violators of environmental legislation</p> <p><u>Lecture</u>. Environmental control over the state of atmospheric air</p> <p><u>Lecture</u>. Environmental control over the state of water resources and water use in production</p> <p><u>Lecture</u>. Environmental control over the impact of livestock complexes on water bodies</p> <p><u>Lecture</u>. Implementation of state control over the transportation, storage and use of pesticides and mineral fertilizers</p> <p><u>Lecture</u>. Organization of border environmental control</p> | <p>Practical classes:</p> <p>Calculation of the amount of compensation for damages caused to the state as a result of excess emissions of pollutants into the atmosphere</p> <p>Calculation of the amount of compensation for damages caused to the state as a result of violation of the legislation on the protection and rational use of water resources</p> <p>Calculation of the amount of the fee for pollution of NPS</p> <p>Determination of the amount of damage caused by pollution and littering of land resources due to violation of environmental legislation</p> |

|                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>know modern approaches to the organization of environmentally friendly production, reorganization and reconstruction of existing industries from the standpoint of resource saving, taking into account the life cycle of the product.</p> | <p><u>Lecture.</u> Inventory of pollutant emissions at the enterprise and report on it</p> <p><u>Lecture.</u> Theoretical and Legal Foundations of Standardization</p> <p><u>Lecture.</u> Organization of work on standardization and requirements for the content of regulatory documents</p> <p><u>Lecture.</u> International activities in the field of environmental standardization. Environmental standardization</p> <p><u>Lecture.</u> Environmental standardization.</p> <p><u>Lecture.</u> Certification as a means of ensuring quality of life.</p> <p><u>Lecture.</u> Types, bodies and functions of the certification system.</p> <p><u>Lecture.</u> Accreditation of conformity assessment bodies</p> <p><u>Lecture.</u> National certification systems in economically developed countries. International cooperation</p> <p><u>Lecture.</u> Certification of subjects, objects and systems. International cooperation.</p> | <p>Practical classes:</p> <p>Calculation of the amount of compensation for damages caused to the state as a result of excess emissions of pollutants into the atmosphere</p> <p>Calculation of the amount of compensation for damages caused to the state as a result of violation of the legislation on the protection and rational use of water resources</p> <p>Calculation of the amount of the fee for pollution of NPS</p> <p>Determination of the amount of damage caused by pollution and littering of land resources due to violation of environmental legislation</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Policy and control

### 7. Educational Component Policy

#### Rules for attending classes and behavior in the classroom

Students are obliged to take an active part in the educational process, not to be late for classes and not to miss them without a good reason, not to interfere with the teacher's conduct, not to be distracted by actions not related to the educational process.

#### Rules for assigning incentive and penalty points

Rules for assigning incentive and penalty points.

- incentive points can be awarded by the teacher only for the performance of creative work on the educational component or additional completion of on-line specialized courses with the receipt of an appropriate certificate:

- <https://prometheus.org.ua/prometheus-free/environmental-damage-assessment/>

- <https://prometheus.org.ua/prometheus-free/eu-green-deal-ukraine/>

- <https://www.coursera.org/learn/russian-water-management?isNewUser=true>

But their amount cannot exceed 10% of the rating scale.

- Penalty points are not provided within the educational component.

#### Deadline and retake policy

In case of debts from the educational component or any force majeure circumstances, students should contact the teacher through the available (provided by the teacher) communication channels to solve problematic issues and agree on an algorithm of actions for working out.

#### Academic Integrity Policy

Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the absence of references when using printed and electronic materials, quotes, opinions of other authors. Hints and cheating are unacceptable when writing tests, conducting classes; passing the test for another graduate student; copying materials protected by the copyright system without the permission of the author of the work.

The policy and principles of academic integrity are defined in Section 3 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Read more: <https://kpi.ua/code>  
**Academic Conduct and Ethics Policy**

Students should be tolerant, respect the opinions of others, formulate objections in the correct form, and constructively maintain feedback in the classroom.

The norms of ethical behavior of students and employees are defined in Section 2 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Read more: <https://kpi.ua/code>

## 8. Types of control and rating system for assessing learning outcomes (RSO)

Distribution of study time by types of classes and tasks from the educational component according to the working curriculum:

| Semester | Study time |          | Distribution of training hours |           |           |     | Control measures |     |                  |
|----------|------------|----------|--------------------------------|-----------|-----------|-----|------------------|-----|------------------|
|          | Loans      | Acad. H. | Lecture                        | Practical | Lab. Rob. | SRS | FDM              | OCD | Semester control |
| 2        | 5          | 150      | 30                             | 16        | —         | 104 | 1                | 1   | Exam             |

### The student's rating in the discipline consists of the points that he receives for:

For full-time study, it is proposed to introduce a rating system for assessing the success of students' assimilation of educational material from the educational component. The student's rating in the educational component "**Certification and Control of Environmental Protection**" consists of points received for:

- 1) performance of R&D;
- 2) surveys at lectures;
- 3) work in practical classes;
- 4) modular control work (2 parts);
- 5) Exam answers.

The semester control is an exam.

### System of rating (weight) points and evaluation criteria

Rating Score System and Evaluation Criteria:

1. Express control at lectures:

Weight score –3.

6 answers  $3 \times 6 = 18$  points

Criteria for assessing students' knowledge:

| Completeness and signs of response                  | Points |
|-----------------------------------------------------|--------|
| Clear and complete answer to questions              | 3      |
| Some inaccuracies or errors were made in the answer | 1-2    |
| Answer not counted                                  | 0      |

2. Work in practical classes:

Weight score – 1 point. The total number of points in practical classes is  $1 * 4 = 4$  points

Criteria for assessing students' knowledge:

| Completeness and signs of response   | Points |
|--------------------------------------|--------|
| Implementation of the practical task | 1      |
| Failure to perform practical work    | 0      |

3. Modular Control (Rm)

Weight score 10. The maximum number of points for all tests is  $10 \text{ points} \times 2 = 20$  points.

Criteria for evaluating tests:

| <b>Completeness and signs of response</b>                           | <b>Points</b> |
|---------------------------------------------------------------------|---------------|
| Clear and complete answer to questions                              | 10            |
| Some inaccuracies or errors were made in the answer                 | 5 - 9         |
| The answer does not contain the wording of terms, laws and formulas | 1 - 4         |
| Answer not counted                                                  | 0             |

#### 4. Implementation of the R&D:

The maximum number of points for completing a homework test is 18 points.

Criteria for assessing students' knowledge:

| <b>Completeness and signs of response</b>                                       | <b>Points</b> |
|---------------------------------------------------------------------------------|---------------|
| "excellent" – a creative approach to solving the problem                        | 15 - 18       |
| "good" – deep disclosure of the problem, reflection of one's own position       | 8 - 14        |
| "satisfactory" – reasonable disclosure of the problem with certain shortcomings | 1 - 7         |
| "unsatisfactory" – the task was not completed, the R&D was not credited         | 0             |

The presence of a positive assessment in OCD is one of the conditions for admission to the exam.

#### Calculation of the rating scale (R):

The sum of the weight points of control measures during the semester is:

$$R_c = 3 * 6 + 1 * 4 + 10 * 2 + 18 = 60 \text{ points.}$$

According to the results of educational work, before the first certification, the "ideal student" should score 30 points. At the first attestation, the student receives "enrolled" if his current rating is at least 20 points.

According to the results of educational work, before the second attestation, the "ideal student" should score 60 points. At the second attestation, the student receives "enrolled" if his current rating is at least 40 points.

During the exam, students give answers to 40 test questions, each of which is estimated at 1 point.

The maximum number of points is  $40 \times 1 = 40$  points.

The component of the exam scale is 40% of R:

$$R_{ex} = 40 \text{ points.}$$

Thus, the rating assessment for the educational component is:

$$R = 60 + 40 = 100 \text{ points.}$$

Students who receive an F grade are not allowed to take the exam and must increase their ranking.

A prerequisite for admission to the exam is the completion of all MCR and R&D.

The sum of starting points and points for the exam is converted to the exam score according to the table.

| <b>Points <math>R = R_c + R_{EKZ}</math></b> | <b>Score</b>  |
|----------------------------------------------|---------------|
| 95...100                                     | Perfectly     |
| 85...94                                      | Very good     |
| 75...84                                      | Well          |
| 65...74                                      | Satisfactory  |
| 60...64                                      | Enough        |
| less than 60                                 | Disappointing |

|                                 |             |
|---------------------------------|-------------|
| Uncredited MCR and OCD or RC<30 | not allowed |
|---------------------------------|-------------|

## **9. Additional information on the educational component**

### **Approximate list of RWD tasks**

1. Formation of derived quantities (with an example)
2. Extra-system units and reasons for their use
3. Ephemeris Time
4. Adaptation of domestic legislation in the field of norms and standards to European requirements
5. Levels of product unification. Coefficients for determining the unification of products
6. Structure of legislation and normative documents in the field of standardization
7. Procedures for the development and adoption of standards
8. Procedure for development and approval of technical specifications
9. Procedure for development and approval of technical regulations
10. The procedure for attestation of auditors and the procedure for cancellation of the certificate.
11. International Social Responsibility Standards: SA 8000 Social Responsibility Standard, ISO 26000 Social Responsibility Guidelines, OHSAS Occupational Safety Management Standards
12. Coding System Identification Numbers
13. Environmental certification of territories
14. Quality Management Systems and Environmental Management Systems: Implementation in the World and in Ukraine
15. Trends in the development of Ukraine's activities in the Philippines
16. Requirements for product certification bodies. Their representatives in Ukraine
17. Requirements for certification bodies for environmental management systems. Their representatives in Ukraine
18. Dynamics of the process of certification of environmental management systems in Ukraine over the past ten years
19. Results/Consequences/Experience of Implementing Environmental Management Systems (Case Studies)
20. Procedure for maintenance and renewal of certified environmental management systems/product quality systems

### **Work program of the academic discipline (syllabus):**

**Compiled by** Prof., Doctor of Technical Sciences, Shabliy T.O., Associate Professor, Ph.D., Nosacheva Y.V.

**Approved** by the Department of E and TRP (Minutes No. 17 dated 29.05.2025).

**Approved** by the methodological commission of the ICF (protocol No. 11 dated 27.06.2025).