



**Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact  
Assessment**

**Working program of the discipline (Syllabus)**

Details of the discipline	
Level of higher education	<i>the first (educational and professional)</i>
Field of study	<i>10 Natural Sciences</i>
Speciality	<i>101 Ecology</i>
Educational program	<i>Environmental safety</i>
Discipline status	<i>Normative</i>
Form of study	<i>full-time /remote/mixed</i>
Year of preparation, semester	<i>3 year, 6 semester</i>
Volume of discipline	<i>3 ECTS credits (90 hours)</i>
Semester control/ control measures	<i>Exam</i>
Schedule of classes	<i>2 hours a week (1 hour of lectures and 1 hour of practical classes)</i>
Language of teaching	<i>Ukrainian</i>
Information about the course instructors / teachers	Lecturer: <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi/radovenchik-yaroslav-vyacheslavovich.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi/radovenchik-yaroslav-vyacheslavovich.html</a> Practical: <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi/radovenchik-yaroslav-vyacheslavovich.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi/radovenchik-yaroslav-vyacheslavovich.html</a>
Course placement	<a href="https://do.ipk.kpi.ua/course/view.php?id=4250">https://do.ipk.kpi.ua/course/view.php?id=4250</a>

**The program of the discipline**

**1. Description of the discipline, its purpose, subject of study and learning outcomes**

*Any branch of human activity creates a powerful anthropogenic impact on the components of the environment. When conducting new technologies and industries, economic criteria, not environmental ones, have always been decisive. This approach has created a catastrophic situation with the state of pollution and negative impact on the environment. The procedure for environmental impact assessment is designed to create effective mechanisms for regulating the negative anthropogenic load on all components of the environment. High-quality implementation of the environmental impact assessment process allows us to ensure compliance with all the necessary regulatory and legal aspects of the environmental safety of the planned activities. The EIA procedure is provided for most environmentally hazardous technologies and industries, so knowledge of this discipline is an integral part of the quality training of future specialists in the field of environmental safety.*

*Subject of the discipline "Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact Assessment" is a procedure for assessing the impact on the environment from the planned or implemented activities of various sectors of the economy.*

*The purpose of the discipline "Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact Assessment"*

*The purpose of studying the discipline is to form students' full range of knowledge on the procedure for assessing environmental impact, a detailed study of all stages of its implementation. In accordance*

with the goal, the preparation of bachelors requires the formation of the following competencies among students:

- the ability to assess the impact of technogenesis processes on the state of the environment and identify environmental risks associated with production activities;
- ability to inform the public about the state of environmental safety and balanced environmental management;
- ability to master international and domestic experience in solving regional and transboundary environmental problems;
- the ability to develop projects for calculating the maximum permissible discharges and emissions, to control compliance with the standards of GDS, GDV;
- ability to distinguish between technological processes of production, determine the sources and ways of entry into the environment of harmful components, assess their impact on human health and environmental quality.

In accordance with the requirements of the program of the discipline "**Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact Assessment**", students, after mastering it, must demonstrate the following programmatic learning outcomes:

- use the management principles on which the environmental safety system is based;
- solve problems in the field of environmental protection using generally accepted and / or standard approaches and international and domestic experience;
- be able to predict the impact of technological processes and production on the environment;
- participate in the development and implementation of projects aimed at optimal management and management of industrial and municipal waste;
- be able to form effective communication strategies in order to convey ideas, problems, solutions and their own experience in the field of ecology;
- be able to convey the results of activities to a professional audience and the general public, make presentations and messages;
- be able to explain the social, economic and political consequences of the implementation of environmental projects;
- choose the optimal strategy for holding public hearings on the problems and formation of the territories of the nature reserve fund and the ecological network;
- determine the class of toxicity and danger of chemical pollutants according to the parameters of toxicometry, establish the effect of radiation on environmental objects, calculate the maximum permissible discharges and maximum permissible emissions;
- assess the state of the environment, determine the level of impact of the enterprise (production) on the environment, determine the main environmental pollutants of this enterprise (production).

## **2. Prerequisites and post-requisites of the discipline (place in the structural and logical scheme of training in the relevant educational program)**

Study of the discipline "**Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact Assessment**" is based on the principles of integration of various knowledge gained by students in the study of natural and engineering disciplines. Discipline "**Normalization of Anthropogenic Load on Environment. Part 2. Environmental Impact Assessment**" provides the disciplines "Technoecology", "Ecological and natural-technogenic safety", "Fundamentals of design and construction".

## **3. Contents of the course**

### **Section 1. Basics of the environmental impact assessment procedure**

#### Topic 1.1 Purpose, main objectives and objectives of environmental impact assessment

Key terms and concepts of environmental impact assessment. The need and expediency of the EIA procedure. Subjects and objects of the environmental impact assessment procedure. The role of EIA in ensuring the environmental and technogenic safety of the state.

### Topic 1.2 The impact of anthropogenic activities on the environment

Sectors of the national economy that have the greatest impact on the environment and human health. The impact of the chemical, oil refining and engineering industries. The impact of energy facilities on the environment. The impact of agricultural activities on the environment and natural resources. The impact of the mining industry. Ecological consequences of anthropogenic pollution of the hydrosphere, atmosphere, lithosphere and irrational use of natural resources.

### Topic 1.3 Environmental expertise

General provisions on environmental expertise. The essence and main purpose of environmental expertise. The main tasks of environmental expertise. Forms of environmental expertise. Scientific, economic, legal, organizational and managerial aspects of rationing of anthropogenic substances. Standardization and rationing in the field of water resources protection. Standards in the field of air protection.

### Topic 1.4 Law of Ukraine "On Environmental Impact Assessment"

Main aspects, terms and definitions. The procedure for conducting an environmental impact assessment for objects and projects of different groups. Methodology for environmental impact assessment. State bodies involved in the EIA procedure. Laws and other regulations governing the procedure for environmental impact assessment.

## **Section 2. Stages of environmental impact assessment**

### Topic 2.1 Collection of information and publication of the notice of planned activities

Composition and content of materials necessary for the procedure for assessing the impact of the object on the environment. Processing of primary information about the EIA object and the state of the environment. Preparation, registration and process of publishing a notice of planned activities.

### Topic 2.2 Environmental Impact Assessment Report

Detailed description of the planned activities. Consideration of justified alternatives to the planned activities. Analysis of the current state of the environment, the main components and characteristics of the environment under consideration. Environmental factors that are affected in the implementation of the planned activities. Methods of conducting EIA. The program after project monitoring of environmental quality.

### Topic 2.3 Public discussions and conclusion of the EIA

Public participation in the consideration of the EIA project. Providing comments and suggestions. The procedure for holding public hearings in the process of environmental impact assessment. Work with the Unified Register of EIA. Formation of a conclusion on environmental impact assessment.

### Topic 2.4 Transboundary Environmental Impact Assessment

Assessment of transboundary environmental impact according to the procedure of the state of origin. Assessment of transboundary environmental impact according to the procedure of the affected state. Statements of intent of investment construction, analysis of its environmental consequences

## **4. Learning Materials and Resources**

### *Basic literature*

1. Law of Ukraine "On Environmental Impact Assessment", No. 2059-19 of May 23, 2017. <https://zakon.rada.gov.ua/laws/show/2059-19#Text>.

2. *Popular commentary on the Law of Ukraine "On Environmental Impact Assessment" / E. Alekseeva [edited by O. Kravchenko] - Publishing House "Company "Manuscript" - Lviv, 2018. - 60 p.*
3. *Strategic environmental assessment: opportunities for the public (manual) / C. Shutyak [edited by O. Kravchenko] - Publishing House "Company "Manuscript" - Lviv, 2017. - 28 p.*
4. *Law of Ukraine On Environmental Expertise <https://zakon.rada.gov.ua/laws/show/45/95-%D0%B2%D1%80#Text>.*
5. *Problematic issues of the EIA procedure: analysis and proposals / O. Tarasova, O. Bondarenko, V. Sharavara, G. Protsiv, R. Gavrylyuk, D. Gulevets, I. Timchenko, S. Savchenko, O. Gusev, K. Zhurbas – Kyiv: NECU, 2018. – 16 p.*
6. *Alekseeva E. Environmental Impact Assessment: International standards, experience of other countries and prerequisites for the introduction of a new model of environmental impact assessment in Ukraine and its main elements / S. Vykhrist, E. Yendroshka, N. Mikulich, D. Skrylnikov, M. Shymkus. – Kyiv 2018. – 141 p.*
7. *Resolution of the Cabinet of Ministers of Ukraine No. 1029 of 13.12.2017 "On approval of the Procedure for the transfer of documentation for providing an opinion on environmental impact assessment and financing of environmental impact assessment and the Procedure for maintaining the Unified Register for Environmental Impact Assessment".*
8. *Resolution of the Cabinet of Ministers of Ukraine No. 989 of 13.12.2017 "On Approval of the Procedure for Holding Public Hearings in the Process of Environmental Impact Assessment".*
9. *LIST of information specified by the business entity for registration in the Unified Register for Environmental Impact Assessment <https://zakon.rada.gov.ua/laws/show/1026-2017-%D0%BF#n79>.*

### **Further reading**

10. *Normative and practical aspects of the implementation of environmental impact assessment / ed. V.O. Quiet. – Kyiv, 2003. – 255 p.*
11. *Gomel M.D., Shabliy T.O., Glushko O.V. and others. Environmental safety. Training. manual. – K.: LLC "Infodruk", 2009. – 245 p.*
12. *Sirenko L.V. Methodical instructions for conducting practical classes and for performing independent work on the course "Environmental Expertise". – K.: NTUU "KPI", 2013. – 26 p.*
13. *Convention on Environmental Impact Assessment in a Transboundary Context – UN; Convention, International Document of 25.02.1991 On approval of criteria for determining planned activities that are not subject to environmental impact assessment and criteria for determining expansions and changes in activities and objects that are not subject to environmental impact assessment - Resolution of the Cabinet of Ministers of Ukraine dated 13.12.2017 No. 1010.*
14. *Nekhoroshkov V.P., Popova N.D. Ecological examination of EIA materials: a manual for practical classes. Odessa State Academy of Cold, 2011 – 46 p.*
15. *Environmental impact assessment and public participation: analytical comparative review of European and Ukrainian legislation and recommendations for the implementation of European standards in Ukraine. / Lviv: EPL, 2013. - 96 p.*
16. *The Law of Ukraine "On Strategic Environmental Assessment" <https://zakon.rada.gov.ua/laws/show/2354-19#Text>.*
17. *Instruction on the implementation of environmental expertise / Ecology and law. Kn. I. K. -1998. – 67 p.*
18. *Law of Ukraine "On Environmental Expertise" / Ecology and Law. Kn. I. K. – 1998.*
19. *Law of Ukraine "On Environmental Protection" / Ecology and Law. Kn. I. K. - 1998.*

## Information resources on the Internet

20. Unified Register for Environmental Impact Assessment - <http://eia.menr.gov.ua/>

21. Ministry of Environmental Protection and Natural Resources of Ukraine - <https://mepr.gov.ua/>

22. Electronic archive of scientific and educational materials KPI them. Igor Sikorsky - <https://ela.kpi.ua/>

### Educational content

#### 5. Methods of mastering the discipline (educational component)

##### Lectures

Lectures are aimed at:

- providing modern, holistic, interdependent knowledge of the discipline "Rationing of anthropogenic load on the environment. Part 2. Environmental Impact Assessment", the level of which is determined by the target setting for each specific topic;
- ensuring in the process of the lecture the creative work of students together with the teacher;
- education of students' professional and business qualities and the development of their independent creative thinking;
- formation of students' necessary interest and provision of direction for independent work;
- reflection of the methodological processing of the material (selection of the main provisions, conclusions, recommendations, clear and adequate to their formulations);
- use to demonstrate visual materials, combine, if possible, with the demonstration of results and samples;
- teaching research materials in a clear and high-quality language in compliance with structural and logical connections, explaining all newly introduced terms and concepts;
- accessibility for perception by this audience.

No s/n	The title of the lecture topic and a list of main questions
1	<p><u>Impact of anthropogenic activities on the environment</u></p> <p>The impact of the chemical, oil refining and engineering industries. The impact of energy facilities on the environment. The impact of agricultural activities on the environment and natural resources. The impact of the mining industry. Ecological consequences of anthropogenic pollution of the hydrosphere, atmosphere, lithosphere and irrational use of natural resources. Protected areas, monuments of nature and culture.</p> <p><b>Literature:</b> 1, 2, 11.</p> <p><u>Tasks on IWS.</u> Methods for reducing the negative anthropogenic impact on environmental objects.</p>
2	<p><u>The purpose, main objectives and objectives of environmental impact assessment</u></p> <p>Key terms and concepts of environmental impact assessment. The need and expediency of the EIA procedure. Subjects and objects of the environmental impact assessment procedure. The role of EIA in ensuring the environmental and technogenic safety of the state. Indicators and criteria for assessing the impact on the state of the natural environment. Sanitary protection zones.</p> <p><b>Literature:</b> 1, 2, 5, 6.</p> <p><u>Tasks on IWS.</u> Enterprises and branches of the national economy that pose a special environmental hazard.</p>
3	<p><u>Environmental expertise</u></p>

	<p><i>General provisions on environmental expertise. The essence and main purpose of environmental expertise. The main tasks of environmental expertise. Scientific, economic, legal, organizational and managerial aspects of rationing of anthropogenic substances. Standardization and rationing in the field of water resources protection. Standards in the field of air protection.</i></p> <p><b>Literature: 10, 14, 19.</b>  <i>Tasks on IWS. Forms of environmental expertise.</i></p>
4	<p style="text-align: center;"><u>Law of Ukraine "On Environmental Impact Assessment"</u></p> <p><i>Main aspects, terms and definitions. The procedure for conducting an environmental impact assessment for objects and projects of different groups. Methodology for environmental impact assessment. State bodies involved in the EIA procedure. Laws and other regulations governing the procedure for environmental impact assessment. Initial data for the development of EIA.</i></p> <p><b>Literature: 1, 2, 5, 6.</b>  <i>Tasks on IWS. Basic laws in the field of environmental protection.</i></p>
5	<p style="text-align: center;"><u>Collection of information and publication of a notice of planned activities</u></p> <p><i>Composition and content of materials necessary for assessing the impact of the object on the environment. Processing of primary information about the EIA object and the state of the environment. Preparation, registration and process of publishing a notice of planned activities.</i></p> <p><b>Literature: 1,2, 7, 9.</b>  <i>Tasks on IWS. Official sources of informing the population about the planned activities.</i></p>
6	<p style="text-align: center;"><u>Environmental Impact Assessment Report</u></p> <p><i>Detailed description of the planned activities. Consideration of justified alternatives to the planned activities. Analysis of the current state of the environment, the main components and characteristics of the environment under consideration. Environmental factors that are likely to be affected. Methods of conducting EIA. The program after project monitoring of environmental quality.</i></p> <p><b>Literature: 1, 9.</b>  <i>Tasks on IWS. Methods for assessing the state of the environment.</i></p>
7	<p style="text-align: center;"><u>Public discussions in the EIA process</u></p> <p><i>Public participation in the consideration of the EIA project. Providing comments and suggestions. The procedure for holding public hearings in the process of environmental impact assessment. Work with the Unified Register of EIA. Formation of a conclusion on environmental impact assessment.</i></p> <p><b>Literature: 1,2, 8, 20</b>  <i>Tasks on the IWS. Legal aspects of the procedure for conducting public discussions.</i></p>
8	<p style="text-align: center;"><u>Conclusions of the EIA procedure. Environmental conditions for carrying out planned activities</u></p> <p><i>Conclusion on environmental impact assessment. Taking into account the conclusions of the environmental impact assessment procedure in decisions on the implementation of the planned activities. Refusal to issue an opinion on the EIA. The procedure for appealing against the conclusion on environmental impact assessment or refusal to issue an opinion. Conclusions on environmental impact assessment on the inadmissibility of the planned activities. Cancellation of conclusions from the EIA. Taking into account the comments and suggestions of the public in the conclusion from the EIA. Environmental conditions for the planned activities contained in the conclusion from the EIA. The procedure for conducting an additional environmental impact</i></p>

	<p>assessment. Post-project monitoring of the EIA object.</p> <p><b>Literature: 1, 2, 5, 8.</b></p> <p><u>Tasks on the IWS.</u> Environmental assessment systems .</p>
9	<p style="text-align: center;"><u>Transboundary Environmental Impact Assessment</u></p> <p>Assessment of transboundary environmental impact according to the procedure of the state of origin. Assessment of transboundary environmental impact according to the procedure of the affected state. Statements of intent of investment construction, analysis of its environmental consequences. Grounds for assessing transboundary environmental impact in accordance with Ukraine's international obligations. Strategic environmental assessment.</p> <p><b>Literature: 1, 3, 13.</b></p> <p><u>Tasks on IWS.</u> International cooperation in the field of environmental protection.</p>

### Practical classes

In the system of professional training of students in this discipline, practical classes occupy 20% of the classroom load. Being an addition to the lecture course, they lay and form the foundations for the qualification of a bachelor in ecology. The content of these classes and the methods of their conduct should ensure the development of the 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 operational 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 objectives of the cycle of practical classes:

- help students systematize, consolidate and deepen knowledge of a theoretical nature in the field of EIA;
- teach students techniques for solving practical problems, promote the mastery of skills and abilities to perform calculations, graphic and other tasks;
- teach them to work with scientific and reference books and schemes;
- to form the ability to learn independently, that is, to master the methods, methods and techniques of self-study, self-development and self-control.

No s/n	The name of the topic of the lesson and the list of main questions
1	<p>Determination of the hazard category of the enterprise and the size of the sanitary protection zone</p> <p><b>Literature: 6, 10, 19.</b></p> <p><u>Tasks on IWS.</u> Normative acts of Ukraine regulating the size and characteristics of sanitary protection zones for different types of industrial enterprises.</p>
2	<p>Analysis of the types of planned activities for the need for an environmental impact assessment procedure.</p> <p><b>Literature: 1, 10, 11.</b></p> <p><u>Tasks on IWS.</u> Industries and enterprises causing the greatest environmental damage (analysis of reports on the state of the environment for different regions of Ukraine)</p>
3-4	<p>Equally analyzing the environmental impact assessment procedure and the procedures for conducting environmental expertise are the main differences. Advantages and disadvantages of the Law of Ukraine "On Environmental Impact Assessment" in comparison with the Law "On Environmental Expertise".</p> <p><b>Literature: 1, 14, 18.</b></p> <p><u>Tasks on IWS.</u> The procedure for conducting an environmental impact assessment.</p>

5	<p><i>Analysis of the information provided in the messages about the planned activity. Key provisions in the creation and publication of notifications on public discussions. Modeling the procedure for holding public hearings.</i></p> <p><b>Literature : 8, 9.</b></p> <p><i>Tasks on the IWS. Preparation of a public appeal and proposals on the scope of necessary research in the EIA report.</i></p>
6	<p><i>Familiarization with the Unified Register of Environmental Impact Assessment.</i></p> <p><b>Literature : 1, 20.</b></p> <p><i>Tasks on IWS. Analysis of the documentation provided in the Unified Register of EIA for various projects of planned activities.</i></p>
7-8	<p><i>Report on environmental impact assessment and conclusion of the EIA procedure. Familiarization with the content of the report on specific examples of various objects.</i></p> <p><b>Literature : 1, 13, 20.</b></p> <p><i>Tasks on IWS. Conclusions of the procedure for assessing cross-border impact.</i></p>
9	<p><i>Modular test work</i></p>

### **Independent work of the student**

*Independent work takes 60% of the time to study the discipline, including preparation for the exam. The main task of students' independent work is to master additional knowledge of EIA, which are not included in the list of lecture questions, through personal search and processing of information. In the process of independent work within the framework of the credit module, the student must consider in detail all the main issues, work out additional literature.*

<b>No s/n</b>	<i>The name of the topic submitted for independent study</i>	<i>Number of hours of <u>IWS</u></i>
<b>1</b>	<p><b>Section 1. Basics of the environmental impact assessment procedure</b></p> <p><i>Types and main sources of anthropogenic environmental pollution.</i></p> <p><i>The influence of anthropogenic pollution on the functioning of natural ecosystems.</i></p> <p><i>Environmental criteria for assessing the content of pollution in the air.</i></p> <p><i>Maximum permissible concentrations of certain types of pollution in atmospheric air and water bodies.</i></p> <p><i>The main types of pesticides and the environmental consequences of their use.</i></p> <p><i>Assessment of radioactive contamination of the soil.</i></p> <p><i>Assessment of the state of erodedness of the soil.</i></p> <p><i>Physico-chemical methods of water analysis.</i></p> <p><i>Water quality standards.</i></p> <p><i>Environmental requirements for district planning projects.</i></p> <p><i>Features of environmental assessment of district planning projects.</i></p> <p><i>Environmental requirements for projects of industrial enterprises.</i></p>	17



2	<p><b>Section 2. Stages of the environmental impact assessment procedure</b></p> <p><i>Characteristics of the physical, geographical and climatic conditions of the area of planned economic activity.</i></p> <p><i>The procedure for maintaining the Unified Register for Environmental Impact Assessment</i></p> <p><i>Responsibility for violation of legislation on environmental impact assessment.</i></p> <p><i>Temporary ban (suspension) and termination of enterprises in case of violation of the legislation on environmental impact assessment</i></p> <p><i>Directive 2011/92/EC of the European Parliament and of the Council on the assessment of the impact of certain public and private projects on the environment.</i></p> <p><i>Convention of the United Nations Economic Commission for Europe on environmental impact assessment in a transboundary context.</i></p>	23
3	<i>Modular test work</i>	4
4	<i>Exam preparation</i>	10
	<b>Total hours</b>	54

## Politics and control

### 6. Policy of the discipline (educational component)

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

*Attending classes is a mandatory component of assessment. 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 to conduct classes, not to be distracted by actions that are not related to the educational process.*

#### Rules for assigning incentive and penalty points

- *Incentive points can be awarded by the teacher exclusively for performing creative work on the discipline or additional completion of on-line specialized courses on the following platforms:*
  - *State Ecological Academy - <http://dea.edu.ua/>*
  - *Ecology. Right. Man is <http://epl.org.ua>*
  - *Association of Environmental Professionals "PAEU" - <https://paeu.com.ua/certification/modular-course/>*
- *The sum of additional points may not exceed 15% of the rating scale.*
- *Penalty points within the discipline are not provided.*

#### Deadline and reshuffle policy

*In case of debts in the discipline or any force majeure, students should contact the teacher through the available (provided by the teacher) communication channels to solve problematic issues and coordinate the algorithm of actions for testing.*

#### 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. Unacceptable hints and write-offs when writing tests, conducting classes; passing the test for another 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, constructively maintain feedback in the classroom.*

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

## 7. Types of control and rating system for evaluating learning outcomes (RSO)

Distribution of study time by type of classes and tasks in the discipline according to the working curriculum:

Semester	Study time		Distribution of study hours				Control measures		
	Credits	acad. year.	Lecture	Practical	Lab. rob.	IWS	ICR	Abstract	Semester control
6	3	90	18	18	–	54	1	-	Exam

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

1. Two tests (MKR is divided into two tests lasting one academic hour);
2. Six answers in practical classes;
3. Answers on the exam.

### 1. Work in practical classes

Weight score – 5. The maximum number of points in all practical classes is equal to: 5 points × 6 lessons = 30 points.

Criteria for assessing students' knowledge:

<b>Completeness and signs of response</b>	<b>points</b>
<i>Povna answer (at least 90% of the required information)</i>	5
<i>Minor inaccuracies were made in the response</i>	4
<i>The answer made significant mistakes, but more than half of the material is presented</i>	3...2
<i>Additions to answers</i>	1
<i>Lack of response</i>	0

### 2. Modular test work

Weight score 20. The maximum number of points for all tests (MKR is divided into two tests lasting one academic hour) is equal to

$$20 \text{ points} * 2 = 40 \text{ points.}$$

Criteria for evaluating tests

points	Complete answer
16... 20	"excellent", creative disclosure of one of the issues, fluency in the material
11...15	"good", incomplete disclosure of one of the questions or a complete answer with minor inaccuracies
4...10	"satisfactory", incomplete disclosure of the issue (at least 60% of the required information) and minor errors
1... 3	Unsatisfactory work
0	Lack of work

Thus, the rating semester scale in the discipline is:

$$R_C = 5 * 6 + 2 * 20 = 70 \text{ points}$$

The exam component is 30% of R:

$$R_e = 30 \text{ points}$$

Thus, the rating scale for the discipline is:

$$R=R_c+R_e=70+30=100 \text{ points}$$

The maximum amount of points of the starting component is 70 points. A prerequisite for admission to the exam is a starting rating of at least 40 points.

According to the results of educational work in the first 7 weeks, the "ideal student" should score 30 points. At the first certification (8th week), the student receives "enrolled" if his current rating is at least 18 points.

According to the results of educational work, for 13 weeks of study, the "ideal student" should score 70 points. At the second certification (14th week), the student receives "enrolled" if his current rating is at least 35 points.

The maximum amount of points is 100. Students take an exam at the end of the semester.

The task of examination tickets consists of three questions. Each question is scored at 10 points according to the grading system:

- "excellent", the full answer (at least 90% of the necessary information) is 10... 7 points;
- "good", a fairly complete answer (at least 75% of the necessary information or minor inaccuracies) – 6... 4 points;
- "satisfactory", incomplete answer (at least 60% of the necessary information and some errors) – 3... 1 point;
- "unsatisfactory", unsatisfactory answer – 0 points.

To obtain an overall score, the sum of all rating points **R** is translated according to the table:

<i>Score</i>	<i>Score</i>
95... 100	<i>Perfectly</i>
85... 94	<i>very good</i>
75...84	<i>well</i>
65... 74	<i>Satisfactory</i>
60...64	<i>enough</i>
RD 60<	<i>Disappointing</i>
<i>Admission conditions not met</i>	<i>not allowed</i>

**Credit module work program (syllabus):**

**Compiled by assoc., Ph.D. Radovenchik Y.V.**

**Approved** by Ecology and technology of plant polymers department (protocol No 14 from 08.06.2022)

**Approved** by the CEF Methodical Commission (protocol No.10\_ of \_24.06.2022\_)