



Basics of packaging design

Work program of the educational component (Syllabus)

Details of the educational component

Higher education level	First (bachelor's)
Field of Knowledge	13- Mechanical engineering
Speciality	131 Applied Mechanics
Educational program	OPP Packaging and Packaging Equipment Engineering
Status of the educational component	Mandatory
Form of study	full-time (full-time)
Year of preparation, semester	3rd year, autumn semester
Scope of the educational component	6(180)
Semester control / control measures	Exam
Class schedule	4 hours per week (2 hours of lectures, 2 hours of practical classes)
Language of instruction	Ukrainian
Information about the course leader / teachers	Lecturer, practical: Associate Professor, Ph.D. SHYLOVYCH Tetiana Borysivna, https://cpsm.kpi.ua/shilovich-tetyana-borisivna.html?tmpl=component
Course placement	Sikorsky Platform: https://do.ipk.kpi.ua/course/view.php?id=3251

Program of the educational component

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

The educational component "Fundamentals of Packaging Design" belongs to the cycle of educational components of professional training of bachelors in the field of knowledge 13 Applied Mechanics, specialty 131 Applied Mechanics.

The purpose of the educational component is to form in students:

General competencies:

- knowledge and understanding of the subject area and understanding of professional activity (GC2);
- Ability to learn and master modern knowledge (GC7);
- Ability to analyze materials, structures and processes based on laws, theories and methods of mathematics, natural sciences and applied mechanics (FC 1);
- Ability to describe and classify a wide range of technical objects and processes, based on a deep knowledge and understanding of basic mechanical theories and practices, as well as basic knowledge of related sciences (FC 10);
- ability to design packaging (FC11);

The subject of the educational component is the processes of construction and design of containers and packaging for various purposes, methods and processes of disposal of packaging made of different materials.

The solution of this problem is determined by the level of training of specialists working in the field of packaging and packaging equipment engineering.

*To successfully solve the problems of calculating the processes of packaging design, specialists must be fluent in information, be able to solve the problems of choosing packaging material, design, and packaging design. According to the requirements of the program **of the educational component "Fundamentals of Packaging Design"**, students after mastering it must demonstrate the following program learning outcomes:*

- Know and understand related fields (mechanics of liquids and gases, heat engineering, electrical engineering, electronics) and be able to identify interdisciplinary connections of applied mechanics at the level necessary to fulfill other requirements of the educational program (PH9);*
- perform analysis by type, purpose, features and design packaging (PH17).*

2. 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 study **of the educational component "Fundamentals of Packaging Design"** is based on the principles of integration of various knowledge received by students during the previous semester, namely "Higher Mathematics", "Physics", "Chemistry". **The educational component "Fundamentals of Packaging Design"** provides the following educational components: "Packaging Technologies and Equipment", "Operation and Maintenance of Technological Equipment".*

***The educational component "Fundamentals of Packaging Design"** is an educational component of professional training, which should provide solutions to complex problems in the field of engineering, rational use of material and energy resources.*

3. Content of the educational component

Chapter 1. Basics of artistic packaging design

Basic concepts and terms. History of packaging development. Historical background of the emergence of design. The main types of aesthetic activity. Aesthetic consciousness and culture. Artistic design. Scientific approaches to packaging design. Development of new products (goods). The main sources of new ideas needed to update the packaging. Basics of composition. Form and its properties. Volumetric and spatial structure. Balance. Tectonics. Symmetry and asymmetry. Types of composition. Arithmetic proportions. Geometric proportions. Scale. Contrast and nuance. Texture and structure. Light and shadow. The color of the subject environment and its role in society. Color in design. Color and its functional purpose. Three-color colorimetry. Psychophysical influence of color. Color harmonies. Color as a compositional medium. The influence of the appearance of packaging on the motivation for buying goods. Emotional, associative and symbolic effect of the color of the packaging on the buyer. The relationship of the design and design of packaging with the methods of transportation and implementation. Marking. Informative packaging function. Identification of products in terms of quality, properties, manufacturer, date of manufacture, weight, etc. Corporate identity. Branding design.

Chapter 2. Development of packaging designs from various materials

Types of packaging. Classification of packaging by purpose, type of material, method of manufacture, etc. The optimal choice of material for packaging. Classification of polymer packaging. Pulp and paper packaging. Glass packaging. Metal packaging. Basic requirements for polymer packaging. General, special, sanitary and hygienic. Requirements for transport containers. Materials for the manufacture of polymer packaging. Polymers and copolymers, polymer processing. Development of the design of polymer packaging. Basic principles of design. Development of packaging design. Determination of overall dimensions. Volume, configuration, threaded connections, anchor points, corrugations, holes, rounding

radii. Slopes and taper. Accuracy of package dimensions. Tolerances for the dimensions of polymer packaging. Shrinkage of polymer material. Auxiliary packaging products. Development of packaging from film and sheet materials. The main types of packaging, materials for manufacturing, methods of making film packaging. Welding and gluing methods, cuts, holes, notches. Features of designing packaging from sheet materials. Pulling height, slopes, locking connections. Materials for the manufacture of packaging. Production technology. Defects and ways to eliminate them. Molded and pressed packaging. Closures. Materials for the manufacture of cast and pressed packaging. Packaging made of gas-filled polymers. Artistic and decorative design. Design requirements, decoration methods. Non-informational packaging decoration. The main ways of decorating. Printing. Indirect decoration methods. Label. Information applied to the label. Instructions for use, date of manufacture, etc. Quality control of finished products. Paper and cardboard packaging. Manufacturing, material, design methods. Food packaging. Technological features of production and storage, requirements for packaging material. Features of food packaging. Disposal and recycling of waste packaging. Eco-friendly packaging. Design potential in marketing strategy and advertising activities.

4. Training materials and resources

Basic literature

1. Shilovych T.B. *Fundamentals of Packaging Design: Lecture Notes, p.1, p Educational **Component** basics of packaging design"*; for students. Faculty of Engineering and Chemistry full-time form of education [Electronic resource]: textbook. /– K. : "KPI them. I. Sikorsky", 2025. – 57 p.
2. Shilovych T.B. *Fundamentals of Packaging Design: Lecture Notes, p.2, p Educational **Component** basics of packaging design"*; For Students. Faculty of Engineering and Chemistry full-time form of study [Electronic resource]: lecture notes /– K. : "KPI them. I. Sikorsky", 2017. – 54 p.
3. *Polymer packaging: monograph* / V.L. Shroeder, V.M. Krivoshey, N.V. Kulyk. – Kyiv: IAC "Upakovka", 2021. – 580 p.
4. *Handbook of Package Engineering*. Joseph F. Hanlon, Robert J. Kelsey, Hallie E. Forcinio, Edition 3 CRC Press, 1998, 568 p.
5. *Fundamentals of packaging design: Practicum on educational discipline* [Electronic resource]: for education. program "Engineering of Packaging and Packaging Equipment" special. 131 Applied Mechanics / KPI. Igor Sikorsky; compiled by: T. B. Shilovych, Y. I. Shilovych – Electronic text data (1 file). – Kyiv: KPI. Igor Sikorsky, 2023. – 41 p. Access mode: <https://ela.kpi.ua/handle/123456789/74559>

Secondary

6. Magazine "Packaging" /Electronic resource. <http://upakjour.com.ua/ru/arhiv.html>

Information resources on the Internet

7. National Library. Vernadsky Access mode <http://www.nbuv.gov.ua>

5. Methods of mastering the educational component

Lectures

Lectures are aimed at:

- providing modern, holistic, interdependent knowledge on the educational component "Basics of Packaging Design", 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 at the current level of development of science in the field of modern methods and processes of disposal;
- 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)	Hours
	Section I Fundamentals of Artistic Packaging Design	
1	<u>Entry. The purpose and objectives of the educational component. Basic concepts. History of packaging development.</u> Basic concepts and terms. History of packaging development. Didactic tools: demonstration of slides depicting packaging products. Literature. References: [1], p. 6-17, [3] p. 39-56 Tasks on the SRS. To investigate the chronology of packaging development according to the materials of the magazine "Packaging", No. 5-6, 2006, No. 1-3, 2007.	<u>2</u>
2	<u>Design as a creative activity of a person</u> Historical background of the emergence of design. The main types of aesthetic activity. Aesthetic consciousness and culture. References: [1], p. 18-21, [3] p. 366-371 Tasks on the SRS. To investigate the chronology of the development of packaging design according to the materials of the magazine "Packaging", No. 5-6, 2006, No. 1-3, 2007.	<u>2</u>
3	Artistic design. Scientific approaches to the development of packaging design Characteristics of the product and its packaging. Marketing function of packaging References: [1, p. 21-36], [3] p. 410-414 Didactic tools: slide demonstration Tasks on the SRS. To explore the main compositional techniques in the design of modern packaging	<u>2</u>

4	<u>Composition Basics</u> Form and its properties. Volumetric and spatial structure. Balance. Tectonics. Symmetry and asymmetry. Types of composition. Formation and tectonics. Terms of reference for packaging design References: [1, p.21-27, 3, p. 410] Didactic tools: demonstration of posters, slides. Tasks on the SRS. Identify the main stages of packaging development	<u>2</u>
5	<u>The process of artistic design and its features. Color and its functional purpose.</u> Color, its properties, purpose, designation in packaging design References: [1, p.39-45] Didactic tools: demonstration of posters, slides.	<u>2</u>
6	<u>The use of color and its effect on humans</u> Color harmonies and the psychophysical effect of color on a person References: [1, p.45-50] Didactic tools: demonstration of posters, slides.	<u>2</u>
7	<u>Marketing and packaging design. Packaging classification. Packaging functions</u> Purpose, classification and main functions of packaging The influence of the appearance of packaging on the motivation for buying goods. Emotional, associative and symbolic effect of the color of the packaging on the buyer. The relationship of the design and design of packaging with the methods of transportation and implementation. References: [1, p.50-56], [3] p.375 Didactic tools: demonstration of posters, slides Tasks on the SRS. To investigate the trend of modern design and develop a sketch of packaging for the selected household product (tea, coffee, detergents, drinks, etc.) using the Internet and periodicals. To investigate the change in the corporate identity of well-known brands (Coca-Cola, BMW, etc.)	<u>2</u>
8	<u>Informative packaging function.</u> Informative packaging function and ways of presenting information. Marking. Identification of products in terms of quality, properties, manufacturer, date of manufacture, weight, etc. References: [1, 56-60, 3, p.400] Didactic tools: demonstration of posters, slides, samples of household packaging. Tasks on the SRS. To investigate the design, fonts, and content of inscriptions on modern household packaging.	<u>2</u>
	Chapter 2 Development of packaging designs from different materials	
9	<u>Classification of containers and packaging. Classification of polymer packaging.</u> Types of packaging. Classification of packaging by purpose, type of material, method of manufacture, etc. Optimal choice of material for packaging. References: [1, p.46-52]. [3] p.180-232	<u>2</u>

	<i>Didactic tools: demonstration of slides, samples of household packaging.</i> <i>Tasks on the SRS. To study the main types of packaging products [8], No. 1-12 2007, 2008.</i>	
10	<u><i>Pulp and paper packaging</i></u> <i>Classification of pulp and paper packaging. Species. Construction and design.</i> <i>Didactic tools: demonstration of slides, samples of household packaging.</i> References: [2], pp. 9-16 <i>Tasks on CPS. Study the main types of box design [4].</i>	<u>4</u>
11	<u><i>Glass packaging.</i></u> <i>Classification of glass packaging. Species. Technology for the manufacture of glass and glass products.</i> References: [2], p.16-21 <i>Didactic tools: demonstration of slides, samples of household packaging.</i> <i>Tasks on the SRS. Study the types of glass containers.</i>	<u>2</u>
12	<u><i>Metal packaging.</i></u> <i>Classification of metal packaging. Species. Technology for the manufacture of aluminum and steel. Construction and design.</i> References: [2], p. 21-23 <i>Didactic tools: demonstration of slides, samples of household packaging.</i> <i>Tasks on the SRS. Study the types of metal containers.</i>	<u>2</u>
13	<u><i>Development of packaging from film and sheet materials.</i></u> <i>The main types of packaging, materials for manufacturing, methods of making film packaging. Welding and gluing methods, cuts, holes, notches. Features of designing packaging from sheet materials. Pulling height, slopes, locking connections.</i> References: [2] p.23-28 ,[3] p.293. <i>Didactic tools: demonstration of slides, samples of household packaging.</i> <i>Tasks on the SRS. To study the method of calculating the thickness of film materials.</i>	<u>2</u>
14	<u><i>Blow Molded Packaging.</i></u> <i>Types of packaging. Manufacturing methods. Materials for the manufacture of packaging. Production technology. Defects and ways to eliminate them.</i> References:[2] p.32-35 ,[3] p.128, 175. <i>Didactic tools: demonstration of the electronic catalog "Ukrplastmash" with virtual types of packaging.</i> <i>Tasks on the SRS. Study the main types of blown containers</i>	<u>2</u>
15	<u><i>Molded and pressed packaging. Gas-filled materials for containers and packaging</i></u> <i>Materials for the manufacture of cast and pressed packaging. Design features. Packaging made of gas-filled polymers. Packaging materials. Obtaining technology. Special and auxiliary packaging materials.</i> References: [2], p. 35-39	<u>2</u>

	<i>Didactic tools: demonstration of samples of cast, pressed and gas-filled packaging</i> <i>Tasks on the SRS. Study the main varieties of cast closures.</i>	
16	<u><i>Artistic and decorative design of packaging</i></u> <i>References: [2], pp. 39-46</i> <i>Didactic tools: demonstration of samples of decorative packaging design</i>	<u>2</u>
17	<u><i>Problems with the disposal of used packaging</i></u> <i>Disposal and recycling of waste packaging</i> <i>References: [2], p. 46-52, [3]p.547</i>	<u>2</u>
	<u><i>Just</i></u>	<u>36</u>

Practical classes

In the system of professional training of bachelors in this educational component, practical classes occupy 50% of the classroom load. As a supplement to the lecture course, they lay and form the foundations of a bachelor's qualification in the field of engineering mechanics, namely the ability to choose the material, the form of packaging and calculate the basic dimensions of packaging of a certain shape. The content of these classes and the methodology of their conduct should ensure the development of creative activity of the individual. They develop constructive 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 professional workers in the field of engineering mechanics.

The main tasks of the cycle of practical classes:

- *to help students systematize, consolidate and deepen theoretical knowledge in the field of modern methods of calculation and design of packages;*
- *to teach students techniques for solving practical problems, to promote the acquisition of skills and abilities in performing calculation, graphic and other tasks;*
- *to teach them to work with reference literature;*
- *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/p	Title of the topic of the practical lesson and a list of main questions (list of didactic support, references to literature and tasks on the SRS)	Hours
1	<i>Familiarization with the types and types of polymer containers and packaging. Container, packaging, label. The main stages of packaging development.</i> References: [5, p.4-5]. <i>Tasks on the SRS. Develop a sequence for working out the design of a virtual product label</i>	2
2	<i>Calculation of volume, surface area and package sweep design</i> References: [5, p.14]. <i>Tasks on the SRS. To develop and draw up the terms of reference for the packaging of the virtual product selected according to Table 1.1</i>	2
3	<i>Development of terms of reference for packaging design</i> References: [5, p.9-15]. <i>Tasks on the SRS. Develop a sketch of the label design using your own sketch.</i>	2
4	<i>Basic principles of composition. Perspective. Drawing from life.</i>	2

	References: [5, p. 15-17] <i>Tasks on the SRS. Using the Internet information network, find the types of packaging for products and analyze their design</i>	
5	<i>Study of types of packaging and innovative solutions</i> References: [5, p. 17-18] <i>Tasks on the SRS. Consider innovative packaging solutions from leading companies</i>	2
6	Description and identification of containers and packaging. Learning the structure of a 13-digit barcode References: [5, p. 18-23]. <i>Tasks on CPS. Analyze barcodes of household packaging [5, p. 18-19].</i>	2
7	Graphic information on the packaging References: [5, pp. 23-25]. <i>Tasks on the SRS. Find and analyze the signs on the packaging</i>	2
8	Seminar lesson. Discussion of the main elements of packaging design. Polling. Certification.	2
9	<i>Standard necks of polymer bottles and bottles. Execution of drawings according to an individual task</i> References: [5, pp. 26-27].	2
10	Calculation of the dimensions of the heat shrink shell References: [5, pp. 28-29]. <i>Tasks on the SRS. Calculate the dimensions of the shrink film</i>	2
11	Formation of a transport package References: [5, pp. 30-34]. <i>Tasks on the SRS. Calculate the dimensions of the film for the transport package</i>	2
12	Making a drawing of a bottle. Assembly drawing References: [5, p. 35].	2
13	Design of an original label with artistic and decorative design for a virtual product with the application of the necessary information. References: [5, p. 35].	2
14	The main common ways to dispose of packaging References: [5, p. 38].	2
15	<i>Polling. Certification</i>	2
16	<i>Control modular work</i>	2
17	<i>Development of the box design</i> References: [5, p. 36].	2
18	<i>Final lesson.</i>	2
	<i>Just</i>	36

Laboratory classes

The working curriculum for the educational component does not provide for laboratory classes

6. Independent work of a student

Independent work takes 60% of the time of studying the educational component, including preparation for the exam. 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. introduction of the latest technologies for the selection of packaging material and calculation of its dimensions, based on its technological purpose. He must master the basic techniques and methods of calculation. The working curriculum provides for the implementation of individual tasks - an essay and calculation work. The list of topics of essays, and the list of tasks for calculation work is given in the syllabus in paragraph 9.

No. s/p	Name of the topic submitted for independent study	Number of IWS hours
1	<u>Artistic design.</u> Scientific approaches to packaging design. Development of new products (goods) that require new packaging. Stages of packaging development. The main sources of new ideas needed to update the packaging. Visiting historical and art museums in Kyiv in order to visually familiarize yourself with material culture, heritage and sources of ideas for updating packaging. Recommended museums: historical, Ukrainian, Western art, Museum of One Street. References:[1, p.18-25]	<u>8</u>
2	<u>Color as a compositional medium.</u> The color of the subject environment and its role in society. Color in design. Color and its functional purpose. Three-color colorimetry. Psychophysical influence of color. Color harmonies. Color as a compositional medium. To choose and justify the choice of packaging color for certain types of household goods chosen by the student's own choice. References:[3]	10
3	<u>Basic requirements for polymer packaging.</u> Basic packaging requirements, choice of material for packaging. General, special, sanitary and hygienic requirements for packaging materials. Requirements for transport containers. Polymers and copolymers, polymer processing. Study the main polymer materials used for the manufacture of packaging. References: [2], p.13-15. [3]	10
4	<u>Molded and pressed packaging. Gas-filled materials for containers and packaging</u> Closures, manufacturing methods. Materials for the manufacture of cast and pressed packaging. Design features. Packaging made of gas-filled polymers. Packaging materials. Obtaining technology. Special and auxiliary packaging materials. Study the main types of closures for blown containers. References: [2] p.31. [14-16]	9
5	<u>Artistic and decorative design of packaging.</u> Registration requirements. Non-informational packaging decoration. The main ways of decorating. Printing. Indirect decoration methods. Means of advertising. Develop a sketch of the packaging design References:[3]	<u>9</u>

6	<u>Disposal and recycling of waste packaging.</u> <i>Methods for disposing of used packaging. Eco-friendly packaging. Design potential in marketing strategy and advertising activities.</i> References: [3, p.133-151]	7
7	<i>Identify resources for the production of biomaterials in Ukraine. Prepare reports on packaging disposal facilities in our country and abroad in periodicals, the Internet.</i>	7
8	<i>Preparation for calculation work</i>	8
9	<i>Preparation of the abstract</i>	6
10	<i>Preparation for the modular test work</i>	4
11	<i>Exam preparation</i>	30
	<i>Total hours</i>	108

Policy and control

7. Educational Component Policy

- *rules for attending classes (both lectures and practical/laboratory);*
- *rules of conduct in the classroom (activity, preparation of short reports or texts, turning off phones, using communication tools to search for information on the teacher's Google drive or on the Internet, etc.);*
- *rules for the protection of laboratory work;*
- *rules for the protection of individual tasks;*
- *rules for assigning incentive and penalty points;*
- *deadline and retake policy;*
- *academic integrity policy;*
- *other requirements that do not contradict the legislation of Ukraine and the regulatory documents of the University.*

Rules for attending classes and behavior in the classroom

Attending classes , both lectures and practical ones, 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's conduct, not to be distracted by actions not related to the educational process.

Rules for the protection of individual tasks

Individual tasks are completed in writing, handed over in Moodle and, after verification, defended by the student in the classroom.

Rules for assigning incentive and penalty points

It is envisaged to provide additional points for the publication of abstracts (5 points for abstracts for all co-authors) and scientific articles on the profile of the educational component (20 points per article for all co-authors), but not more than 10 points per 1 student.

Deadline and retake policy

In case of arrears in the academic discipline 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 practice.

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 exam 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, 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	Ind us. Zan.	SRS	MCW	Abstract	RR	Semester control
5	6	180	36	36	-	108	1	1	1	Exam

The student's rating in the educational component consists of the points that he receives for:

The student's rating in **the educational component** consists of points that he receives for work in practical classes, for performing modular tests, for an essay, for calculation work and for an exam.

Semester control is an exam.

System of rating (weight) points and evaluation criteria

Rating Score System and Evaluation Criteria:

Completing tasks in practical classes.

The weight score for completing 6 tasks in practical classes is 4 points each.

Criteria for evaluating the implementation of the practical task

Completeness and signs of task completion	Points
The task is completed in full	4
Minor deficiencies in paragraph 1	3
Untimely completion of the task	2
Poor performance of the task	1
Failure to complete the task	0

Performing a modular control.

The weight score of the MCW performance is 10 points.

Criteria for evaluating the implementation of the MCW

Completeness and signs of task completion	Points
The MCW is completed in full	10
Minor deficiencies in paragraph 1	9

<i>Significant deficiencies in paragraph 1</i>	<i>7</i>
<i>Incomplete completion of the task</i>	<i>5-6</i>
<i>Poor performance of the task</i>	<i>1-4</i>
<i>Failure to complete the task</i>	<i>0</i>

Abstract execution

The weight score of the abstract is 8 points.

Performance evaluation criteria

<i>Completeness and signs of task completion</i>	<i>Points</i>
<i>The abstract is completed, the topic is fully disclosed</i>	<i>8</i>
<i>Minor deficiencies in paragraph 1</i>	<i>7</i>
<i>Made with flaws</i>	<i>6</i>
<i>Incomplete completion of the task, delivered on time</i>	<i>5</i>
<i>Poor performance of the task</i>	<i>1-4</i>
<i>Failure to complete the task</i>	<i>0</i>

Performance of calculation work

The weight score of the RR performance is 8 points.

Performance evaluation criteria

<i>Completeness and signs of task completion</i>	<i>Points</i>
<i>The RR was completed on time, in full</i>	<i>8</i>
<i>Minor deficiencies in paragraph 1</i>	<i>7</i>
<i>Made with flaws</i>	<i>6</i>
<i>Incomplete completion of the task, delivered on time</i>	<i>5</i>
<i>Poor performance of the task</i>	<i>1-4</i>
<i>Failure to complete the task</i>	<i>0</i>

Conditions for admission to semester control: minimum positive grade for practical work 15 points / enrollment of all practical tasks / positive assessment in the MCW (more than 5 points, completion of the RR and Abstract) semester rating of at least 25 points.

Semester control: exam work.

The weight score of the exam work is 50 points in 2 questions.

Criteria for evaluating the performance of the exam work

<i>Completeness and signs of task completion</i>	<i>Points</i>
<i>The work is done in full</i>	<i>50</i>
<i>Minor deficiencies in paragraph 1</i>	<i>45-49</i>
<i>Significant deficiencies in paragraph 1</i>	<i>40-44</i>
<i>Incomplete completion of the task</i>	<i>20-39</i>
<i>Poor performance of the task</i>	<i>1-19</i>
<i>Failure to complete the task</i>	<i>0</i>

Thus, the rating semester scale from the credit module is:

$$R = R_{pz} + R_{mkr} + R_{rr} + R_{ref} + R_e = 6 \cdot 4 + 10 + 8 + 8 + 50 = 100 \text{ points}$$

According to the results of educational work for the first 7 weeks, the "ideal student" should score 8 points. At the first attestation (8th week), the student receives "enrolled" if his current rating is at least 4 points.

According to the results of educational work for 13 weeks of study, the "ideal student" should score 34 points. At the second attestation (14th week), the student receives "enrolled" if his current rating is at least 17 points.

The maximum amount of points is 100. Obtaining an exam from the educational component "automatically" is not provided.

A prerequisite for admission to the exam is a rating that is at least 50% of the performance of practical work and MCW, RR and abstract, i.e. at least 25 points.

To obtain an exam grade, the sum of all rating points R received during the semester is converted according to the table:

Score	Score
95...100	Perfectly
85...94	Very good
75...84	well
65...74	Satisfactory
60...64	enough
$RD < 60$	Disappointing
Not met the conditions of admission	not allowed

9. Additional information on the educational component

Approximate list of questions submitted for semester control

- 1 Analyze what modern "packaging" is? What are the types of packaging for their intended purpose?
- 2 Analyze what sources of product ideas exist? What sources can you offer based on your own experience?
- 3 Name the main categories of the composition, analyze the composition using the example of household packaging.
- 4 What colors are called "achromatic"? How are they applied in packaging design?
- 5 Analyze the main stages of packaging design development. Determine the place of the constructor in this chain
- 6 Analyze what is the concept of a product? Give examples
- 7 What is a composition?
- 8 What colors are called "chromatic"? How are they applied in packaging design?
- 9 When and where was paper production technology invented? How is paper used in packaging?
- 10 What are the main stages of the product life cycle? At what stage should you pay attention to packaging?
- 11 Describe symmetry as a compositional means, what are the main types of symmetry?
- 12 What are the main colors of the warm range? For packaging which goods it is better to use them
- 13 Analyze the historical background of the invention of the canning method and the tin can
- 14 What are the main sources of product ideas you know?

- 15 What is the means of harmonization "contrast"? Give your own examples.
- 16 What are the three main ways to designate (describe) a color? Which is the most accurate. How is color set in industry?
- 17 For the packaging of which product was foil first used? What is foil used for now?
- 18 What do you mean by the concept of "product concept"?
- 19 What is the means of harmonization "nuance"?
- 20 What colors are classified as "cold" colors? What products are better to decorate in cold colors.

Section II

- 1 What is transport packaging used for, features of its design?
- 2 Classification of polymer packaging according to the technology of its production?
- 3 The main functions of packaging?
- 4 LDPE What does the mark on the packaging mean?
- 5 What is the purpose of consumer packaging and its informative function
- 6 Analyze the classification of packaging according to the materials from which it is made?
- 7 What is the purpose of production containers?
- 8 How is packaging classified according to the type of material from which it is made?
- 9 What does the sign on the packaging mean? PS
- 10 What does the sign on the packaging mean? PVH
- 11 What are the main components of hygienic assessment of packaging?
- 12 What are the main functions of production containers?
- 13 Features of the design and design of consumer containers?
- 14 What are the main types of polymer packaging (by design) known to you?
- 15 What kind of packaging do machines, machines and precision mechanisms need?
- 16 What are the main types of paper bags by their design?
- 17 Features of the design and design of transport containers?
- 18 What are the main ways to decorate the label
- 19 What are the main polymers used for the production of packaging?
- 20 What are the main types of paper bags?

Approximate list of questions submitted for the test

1. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The packaging must contain a liquid volume of 0.75 dm^3 . The ratio of height to diameter $h/d = 2$. When calculating, take into account that the packaging will hold liquid and take into account the additional damper volume.
2. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 1 dm^3 . The ratio of height to diameter $h/d = 2$. When calculating, take into account that the packaging will hold liquid and take into account the additional damper volume.
3. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 1 dm^3 . The ratio of height to diameter $h/d = 2.5$. When calculating, take into account that the packaging will hold liquid and take into account the additional damper volume.
4. Determine the internal geometric dimensions of the vacuum packaging that has a cubic shape and calculate the surface area of such packaging. The packaging must contain a dry product volume of 1.2 dm^3 .

5. Compare the surface area of the cubic packaging with the surface area of the cylindrical packaging (height-to-diameter ratio $h/d = 1$) and analyze which shape is less material-intensive.
5. Determine the internal geometric dimensions of the vacuum packaging that has a cubic shape and calculate the surface area of such packaging. The packaging must contain a dry product volume of 0.8 dm^3 .
6. The height of the polymer bottle is 17 cm. For the purpose of bottle design, divide the bottle by height into 2 parts in the ratio according to the concept of the "golden ratio".
7. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 0.75 dm^3 . The ratio of height to diameter $h/d = 2$. When calculating, take into account that the package will hold liquid and take into account the additional damper volume.
8. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 1 dm^3 . The ratio of height to diameter $h/d = 2$. When calculating, take into account that the package will hold liquid and take into account the additional damper volume.
9. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 1 dm^3 . The ratio of height to diameter $h/d = 2.5$. When calculating, take into account that the package will hold liquid and take into account the additional damper volume.
10. Determine the internal geometric dimensions (diameter and height) of the package that has a cylindrical shape. The package must contain a liquid volume of 0.75 dm^3 . The ratio of height to diameter $h/d = 2$. When calculating, take into account that the package will hold liquid and take into account the additional damper volume.
11. Determine which colors from the proposed series are called "warm": green, black, red, yellow, blue, orange.
12. Select from the proposed range of colors those that are achromatic: green, gray, white, yellow, black, silver, orange.

Approximate list of tasks that are submitted for calculation work

1. Calculation and development of tea packaging.
2. Calculation and development of coffee packaging.
3. Calculation and development of beverage packaging.
4. Calculation and development of packaging of sweets.

Approximate list of abstract topics

Approximate topics of abstracts:

- 1 Modern design and design of polymer packaging packaging
- 2 Modern construction and design of combined packaging
- 3 Metal containers - development trends
- 4 Auxiliary dosing devices in modern packages
- 5 The main decorative means and techniques in the design of goods of different price categories
- 6 Packaging design as a means of patriotic education of the population
- 7 Methods for Disposing of Polymer Containers and Packaging
- 8 Polymeric materials for biodegradable packaging
- 9 Innovations in consumer packaging
- 10 Directions and styles of packaging design.

Work program of the educational component (syllabus):

Compiled by Assoc. Prof., Ph.D., Shilovych T.B.

Approved by the Department of CPSM (Minutes **No. 17 dated 04.06.2025**)

Approved by the ICF Methodological Commission (Minutes **No. 11 dated 27.06.2025**.)