



Equipment for casting, pneumatic-vacuum forming

Educational component work program (Syllabus)

Educational component details

Level of higher education	First (bachelor's)
Discipline	<i>13 Mechanical Engineering</i>
Specialty	<i>133 Industrial mechanical engineering</i>
Educational program	<i>OPP Engineering of equipment for the production of polymer and building materials and products</i>
Status educational component	<i>Selective</i>
Form of study	<i>full-time (day)</i>
Year of training, semester	<i>3rd year, spring semester</i>
Amount educational component	<i>4(120)</i>
Semester control/control measures	<i>Test</i>
Class schedule	<i>3 hours per week (2 hours of lectures, 1 hour of practical classes)</i>
Language of instruction	<i>Ukrainian</i>
Information about the course leader/teachers	Lecturer: <i>Prof., Ph.D., Sivetsky Volodymyr Ivanovych, https://cpsm.kpi.ua/sivetskij-volodimir-ivanovich.html?tmpl=component</i> Practical/Seminar: <i>Doctor of Philosophy, Associate Professor, Shvachko Denys Grigorovich, http://intellect.cpsm.kpi.ua/profile/hdg3</i>
Course placement	<i>Sikorsky Platform: https://do.ipk.kpi.ua/course/view.php?id=4395</i>

Educational component program

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

The educational component "Equipment for casting, pneumatic-vacuum forming" belongs to the cycle of the educational component of professional training, to the educational component of professional and practical training.

Injection molding machines are designed to manufacture various open-mold polymer products by injection molding in an automated mode. Injection molding is one of the most common methods of processing plastics, which consists in filling the mold cavity through a sprue channel with a polymer material that has previously been converted into a viscous state, followed by its compaction and fixation of the mold by cooling or a chemical hardening reaction (vulcanization).

Subject educational component «Equipment for casting, pneumatic-vacuum forming» – Equipment for injection molding, production of disposable polymer products. Basic kinematic and hydraulic diagrams, design features of equipment for casting, pneumatic and vacuum forming. The educational component "Equipment for Casting, Pneumo-Vacuum Forming" orients students to the modern world level of scientific and technical developments in the fields of application of equipment for the production of polymer and building materials.

Goal educational component «Equipment for casting, pneumatic-vacuum forming»

The purpose of studying this educational component is to form in bachelors a complex of knowledge regarding the design features of equipment for the production of polymer and building materials and products.

In accordance with the goal, the training of bachelors in this specialty requires strengthening the competencies formed in students:

Integral competence: The ability of a person to solve complex specialized tasks and practical problems in a certain field of professional activity or in the process of learning, which involves the application of certain theories and methods of relevant sciences and is characterized by the complexity and uncertainty of conditions.

ZK1 Ability to abstract thinking, analysis and synthesis. ZK2 Knowledge and understanding of the subject area and understanding of professional activity. ZK4 Ability to apply knowledge in practical situations. ZK7 Ability to learn and master modern knowledge. ZK12 Ability to search, process and analyze information from various sources. ZK13 Ability to evaluate and ensure the quality of work performed. ZK14 Ability to exercise one's rights and obligations as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of man and citizen in Ukraine. FK1 Ability to analyze materials, structures and processes based on the laws, theories and methods of mathematics, natural sciences and applied mechanics. FK2 Ability to assess the performance parameters of materials, structures and machines in operational conditions and find appropriate solutions to ensure a given level of reliability of structures and processes, including in the presence of some uncertainty. FC3 Ability to conduct technological and technical-economic assessment of the effectiveness of using new technologies and technical means. FC4 Ability to make the optimal choice of technological equipment, complete technical complexes, have basic ideas about the rules of their operation. FC10 Ability to describe and classify a wide range of technical objects and processes, based on deep knowledge and understanding of basic mechanical theories and practices, as well as basic knowledge of related sciences. FC11 Ability to design packaging; FC12 Ability to designate a technological process for manufacturing a packaging polymer material or product and determine the appropriate technological equipment for implementing the technological process; FC13 Ability to justify the choice of technology and packaging equipment depending on the packaging product.

1. Prerequisites and postrequisites of the educational component (place in the structural and logical scheme of training according to the corresponding educational component)

StudyThe educational component "Equipment for casting, pneumatic-vacuum forming" is based on the principles of integrating various knowledge obtained by students during the bachelor's degree when studying educational components, in particular: "Technology of composite materials", "Rheology", "Technology of polymer processing", "Mechanics of a solid deformed body", "Theory of mechanisms and machines", "Theoretical mechanics", "Hydromechanics and hydraulics", "Installation, operation and reliability of technological equipment", "Technological foundations of mechanical engineering", "Occupational safety and civil protection".

2. Content of the educational component

Section 1. Polymer injection molding machines.

Topic 1. Purpose, classification, structural and layout features and principle of operation of LM.

Topic 2. Analysis and calculation of the component stages of the LM cycle diagrams. Machine productivity.

Topic 3. Fundamentals of designing injection mechanisms.

Topic 4. Basic parameters and designs of hydraulic and lever-hydraulic closing mechanisms.

Topic 5. Design and calculation of closing mechanisms.

Section 2. Blow molding machines.

Topic 1. Purpose, classification, structural and layout diagram and principle of operation of blow molding machines.

Section 3. Equipment for pneumatic, vacuum, rotational and centrifugal molding.

Topic 1. Equipment for pneumatic vacuum forming.

Topic 2. Equipment for rotational and centrifugal molding

3. Educational materials and resources

Basic literature

1. *Equipment for casting, pneumatic-vacuum forming [Electronic resource]: a teaching aid for bachelor's degree applicants in speciality 131 "Applied mechanics", 133 "Industrial mechanical engineering" / Igor Sikorsky Kyiv Polytechnic Institute; compiled by: V. I. Sivetsky, D. G. Shvachko. – Electronic text data (1 file: 4.5 MB). – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2023. – 140 p. – Title from the screen. <https://ela.kpi.ua/handle/123456789/62812>.*
2. *O. P. Burmistenkov, Production of cast parts and products from polymer materials in the footwear and leather goods industry: monograph / O. P. Burmistenkov, B. M. Zlotenko, V. P. Konoval, I. V. Panasyuk, M. Ye. Skyba, O. M. Synyuk. - Khmelnytskyi, 2007. - 255 p. - Bibliography: p. 249-252. - Ukrainian.*
3. *Zavistovsky G., Zemba Sh. Setting up the process of molding plastic parts under pressure./ Ternopil, Dzhura 2007, 144 p. ISBN 978-966-8650-70-3*
4. *Wear resistance of parts of extruders and automatic molding machines in an abrasive environment / Under the general editorship of V.G. Kaplun. – KhNU.– 2014.–244p. ISBN 978-617-7094-17-2*
5. *Technological foundations of processing of polymeric materials [Electronic resource]: textbook. I. O. Mikulyonok. 2nd ed., revised and supplemented; Igor Sikorsky Kyiv Polytechnic Institute. – Electronic text data (1 file: 7.21 MB). – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2020. – 292 p. – Bibliography: p. 287–288.*
6. *Sikora R. Przetwórstwo tworzyw welkocząsteczkowych. - Warsaw, 1993. - 528*
7. *Sporyagin, E. O. Theoretical foundations and technology of production of polymer composite materials: teaching aids / E. O. Sporyagin, K. E. Varlan. – D.: Publishing house of DNU, 2012. – p. ISBN*
8. *D.E. Walsh Do It Yourself Vacuum Forming for the Hobbyist, Workshop Publishing, Lake Orion, MI, 2002*

Additional literature

9. *Soroka, W Fundamentals of Packaging Technology. — IoPP, 2002. — ISBN 1-930268-25-4*
10. *Yam, K Encyclopedia of Packaging Technology. — John Wiley & Sons, 2009. — ISBN 978-0-470-08704-6*
11. *Suberlyak O.V. Technology of processing of polymeric and composite materials: Textbook. / O.V. Suberlyak, P.I. Bashtannyk. – Lviv: Rastr-7, 2015. – 415p.*
12. *Suberlyak O.V., Bashtannyk P.I. Technology of processing of polymer and composite materials. – Kyiv.: 2006. - 270 p.*
13. *Technology of production of products from plastics and composites: Textbook/ O.V. Suberlyak, P.I. Bashtannyk.- K.: ISDO, 1995. – 164 p.*

14. Suberlyak O.V. Technology of processing of polymeric and composite materials: manual. / O.V. Suberlyak, P.I. Bashtannyk. – Lviv: Rastr-7, 2007. – 307 p.

Information resources on the Internet

18. Association of Manufacturers of Profiled Polymer Products -
<https://www.bau.com.ua/f/appm/>

19. Ukrainian Association of Polymer Products Manufacturers -
<https://opendatabot.ua/c/44034222>

Educational content

4. Methodology for mastering the educational component

Lectures are aimed at:

- *providing modern, holistic, interdependent knowledge of the educational component, the level of which is determined by the target setting for each specific topic;*
- *ensuring creative work of students together with the teacher during the lecture;*
- *fostering professional and business qualities in students and developing their independent creative thinking;*
- *developing the necessary interest in students and providing direction for independent work;*
- *determination of the current level of development of science and technology in the field of numerical calculation methods;*
- *reflection of the methodological processing of the material (highlighting the main ideas and provisions, underlining conclusions, repeating them in different formulations);*
- *acquisition of visual, combining if possible with the demonstration of audiovisual materials, models, models and samples;*
- *teaching in clear and concise language, explaining all newly introduced terms and concepts;*
- *accessibility for audience perception.*

No. of the com pany	Title of the lecture topic and list of main questions (list of didactic aids, references to literature and tasks for the SRS)	Hours
Section 1. Polymer injection molding machines		
1.	TOPIC 1. Purpose, classification and layout of polymer injection molding machines. <i>Design, operating principle and cycle diagrams of polymer injection molding machines.</i> Literature:1 [229-242],3. <i>Tasks on the CTC. The essence of the casting method, its types. Processes occurring in the casting mold. Layout diagrams of machines for polymer injection molding.</i>	4

2.	TOPIC 2. Parametric calculations of injection molding machines Injection molding methods. Analysis and calculation of the component stages of the cycle diagrams of injection molding machines. Machine productivity. Literature[Error! Reference source not found.] pp. 231-253;[Error! Reference source not found.] pp. 202-224; Tasks on the SRS. Variety of cyclograms for different layout schemes of machines for polymer injection molding. Analysis and calculation of the component stages of the cyclogram.	6
3.	TOPIC 3. Injection mechanisms Types and layout diagrams of injection mechanisms and the basics of their design. Literature[1] pp. 264-280; [Error! Reference source not found.] pp. 65-69 Tasks on the SRS. Layout diagrams of injection mechanisms.	6
4.	TOPIC 4. Closing mechanisms. Basic parameters and designs of hydraulic and lever-hydraulic closing mechanisms. Design and calculation of closing mechanisms. Literature: [1] pp. 282-293, [Error! Reference source not found.] pp. 243-247 Tasks for the SRS. Kinematic diagrams of lever-hydraulic closing mechanisms. Hydraulic diagrams of the drive of lever-hydraulic closing mechanisms.	6
Section 2. Blow molding machines		
5.	TOPIC 1 Purpose, classification, structural and layout diagrams and principle of operation of blow molding machines.. Work cycles, calculation of cycle components and performance of blow molding machines. Literature: [1], pp. 298-324, [Error! Reference source not found.], pp. 5-52, 71-113. Tasks for the SRS. The essence of the method and the main stages of blow molding. Layout diagrams of blow molding machines. Heads for extrusion blow molding.	4
Section 3. Equipment for pneumatic, vacuum, rotational and centrifugal forming		
6.	TOPIC 1 Equipment for pneumatic vacuum forming. Purpose, classification, design and principle of operation of pneumatic vacuum forming machines. Basics of calculation. Literature:[1], p325-348,[Error! Reference source not found.], pp. 207-242. Tasks for the SRS. The essence and varieties of methods of pneumatic-vacuum forming. Structural diagrams of pneumatic-vacuum forming machines. Sequence of calculation of structural and technological parameters of the machine and pneumatic-vacuum systems.	4
7.	TOPIC 2.Equipment for rotational and centrifugal molding. Purpose, classification, design and principle of operation of machines for rotational and centrifugal molding. Basics of calculation. Literature:[1], pp. 349-360,[Error! Reference source not found.], pp. 227-233 Tasks for the VRS. The process of vulcanization of rubber products. Formulation of compositions of blanks for forming tires. Scheme of technological operations for assembling tires. Sequence of calculation of structural and technological parameters of machinesrotational and centrifugal molding.	6
Total		36

Practical classes

The purpose of the cycle of practical classes in the educational component is to consolidate theoretical knowledge and develop skills in conducting parametric calculations and thermal calculations, as well as calculations for the strength and reliability of components and parts of

equipment.

The main tasks of the practical training cycle:

- help students systematize, consolidate and deepen their knowledge theoretical in the field of chemical engineering and polymer processing;
- to teach students techniques for solving practical problems, to promote the acquisition of skills and abilities for performing calculations, graphics and other types of problems;
- teach them to work with scientific and reference literature, documentation and diagrams;
- to form the ability to learn independently, that is, to master the methods, means and techniques of self-study, self-development and self-control.

No of the com pan y	Title of the topic of the practical lesson and list of main questions (list of didactic material, references to literature and tasks for the CTS)	Hours
1.	Calculation of a lever-type locking mechanism. Literature: [Error! Reference source not found.] p.23 28. Tasks on the CTC. Structural variations of locking mechanisms.	2
2.	Calculation of the hydraulic locking mechanism. Literature: [Error! Reference source not found.] pp. 9 -14. Tasks on the CTC. Diagram and basic elements of a hydraulic type MZ.	2
3.	Calculation of a combined type locking mechanism. Literature: [Error! Reference source not found.] pp. 9 -14. Tasks on the CTC. Hydraulic diagrams of the combined type MZ drive.	2
4.	Calculation and construction of a blow molding machine cycle diagram. Literature: [Error! Reference source not found.] pp. 9 -14. Tasks on the CTC. Types of cycle diagrams of blow molding machines.	2
5.	Calculation of the form control mechanism. Literature: [Error! Reference source not found.] pp.147 -149. Tasks on the VT Types and variations of the design of mold and nipple control mechanisms.	2
6.	Calculation of the plunger-type injection mechanism. Literature: [Error! Reference source not found.] p.23 28. Tasks on the CTC. Structural variations of plunger-type injection mechanisms.	2
7.	Calculation of a worm-type injection mechanism. Literature: [Error! Reference source not found.] pp. 9 -14. Tasks on the CTC. Structural variations of worm-type injection mechanisms.	2
8.	Calculation of a combined type locking mechanism. Literature: [Error! Reference source not found.] pp. 9 -14. Tasks on the CTC. Hydraulic diagrams of the combined type MZ drive.	2
9.	Modular test work.	2
	Total	18

5. Independent work of a higher education student

Independent work of students takes 55% of the time of studying the course, also includes preparation for the exam. The main task of independent work of students is to master scientific knowledge in the field of modern methods of calculating machines and apparatuses of chemical production, which are not included in the list of lecture questions, through personal search for information, the formation of active interest in a creative approach in educational work and in the performance of coursework. In the process of independent work within the framework of the educational component, the student must learn to deeply analyze the problem of choosing effective methods of calculating apparatuses of chemical production and, based on calculations, come to his own substantiated conclusions.

No. of the com pan y	Title of the topic to be studied independently	Number of hours of CTC
Chapter 1. Polymer injection molding machines.		
1.	The essence of the casting method, its types. Processes occurring in the casting mold. Layout schemes of polymer injection molding machines. Variety of cyclograms for different layout schemes of polymer injection molding machines. Analysis and calculation of the component stages of the cyclogram. : Layout schemes of injection mechanisms. Kinematic schemes of lever-hydraulic closing mechanisms. Hydraulic drive schemes of lever-hydraulic closing mechanisms. References: 1 [229-297],3.	20
Section 2. Blow molding machines		
3.	The essence of the method and the main stages of blow molding. Layout diagrams of blow molding machines. Heads for extrusion sliding molding. Layout diagrams of mold and nipple control mechanisms. References: 1 [298-325].	26
Section 3. Equipment for pneumatic, vacuum, rotational and centrifugal forming		
4.	The essence and varieties of methods of pneumatic-vacuum forming. Structural diagrams of pneumatic-vacuum forming machines. Sequence of calculation of structural and technological parameters of the machine and pneumatic-vacuum systems. Literature:1 [325-347].	10
5.	Preparation for the modular test	4
6.	Preparation for the test	6
	Total hours	66

Policy and control

6. Educational component policy

Rules for class attendance and behavior in class

Attendance is a mandatory component of assessment. Students are required to actively participate in the learning process, not be late for classes or miss them without a valid reason, not interfere with the teacher conducting classes, and not be distracted by activities unrelated to the learning process.

Rules for assigning incentive and penalty points

- Incentive points can be awarded by the teacher exclusively for performing creative works in the educational component or for additional completion of online specialized courses with the receipt of the corresponding certificate:
 - <https://www.coursera.org/learn/water-treatment>;
 - <https://croapaia.com/water-treatment-pro/>;
 - <https://www.shortcoursesportal.com/studies/56436/introduction-to-drinking-water-treatment.html>).

But their sum cannot exceed 25% of the rating scale.

- Penalty points are not provided within the framework of the academic discipline.

Deadline and Rescheduling Policy

In the event of arrears for the educational component or any force majeure circumstances, students must contact the teacher via available (provided by the teacher) communication channels to resolve problematic issues and agree on an algorithm of actions for work-out.

Academic Integrity Policy

Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the lack of references when using printed and electronic materials, quotes, opinions of other authors. Hints and copying when writing tests, conducting classes are unacceptable; taking credit 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". More details: <https://kpi.ua/code>

Academic Conduct and Ethics Policy

Students should be tolerant, respect the opinions of others, formulate objections in a correct form, and provide constructive feedback in class.

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". More details: <https://kpi.ua/code>

7. 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 teaching hours					Control measures		
	Loans	academic year	Lectures	Practical	Lab work	Ind. occupation	CRC	MKR	RR	Semester control
6	4	120	36	18	-	-	66	1	–	Test

A student's rating for the educational component consists of the points he receives for:

The rating for the educational component consists of the points he receives for work in practical classes and for MCR.

Rating (weighting) points system and evaluation criteria

1. Performing practical work.

Weighted score – 10 points. The maximum number of points for all practical work is:

10 points x 9 points/year = 90 points

Criteria for assessing student knowledge

Mark	Completeness of the answer
10-9	Timely and complete completion of the task, preparation of all programs, calculations, registration and protection without flaws
8-7	Minor flaws in the programs that do not affect the calculation results
6-4	Untimely completion of the task, shortcomings in programs, calculations and design
3-0	Failure to complete the task

2. Completion of modular test work.

Weighted score – 10 points. The modular test has two tasks, each task is evaluated at 5 points. The maximum number of points on the modular test is:

10 points x 1 MCR = 10 points

Criteria for assessing student knowledge

Mark	Completeness of the answer
10-9	Timely and complete completion of the task, preparation of all programs, calculations, registration and protection without flaws
8-6	Minor flaws in the programs that do not affect the calculation results
5-4	Untimely completion of the task, shortcomings in programs, calculations and design
3-0	Failure to complete the task

Students who have a rating of less than 60 points at the end of the semester, as well as those who want to improve their grade, take a final exam. A "hard" system is used, where the student loses their starting rating, and the grade for the educational component is given based on the student's performance in the final exam.

At the test, students complete a written test. Each task contains two theoretical questions. The list of questions is given in the methodological recommendations for mastering the educational component. Each theoretical question is evaluated at 50 points.

Evaluation system for theoretical questions RT1, RT2 ::

"excellent", complete answer (at least 95% of the required information) – 50–48 points;

"good", sufficiently complete answer (at least 75% of the required information or minor inaccuracies) – 47–38 points;

"satisfactory", incomplete answer (at least 60% of the required information and some errors) – 37-30 points;

"unsatisfactory", unsatisfactory answer – 0 points.

The maximum rating for the test is

$RE = RT1 + RT2 = 50 + 50 = 100$ points.

Admission requirements for semester control: enrollment of all practical work.

The sum of the starting points and/or points for the credit test is converted into the credit score according to the table:

To obtain a credit score, the sum of all rating points received during the semester is translated according to the table:

Number of points	Rating
95...100	perfectly
85...94	very good
75...84	good
65...74	satisfactorily
60...64	enough
RD < 60	unsatisfactorily
Admission conditions not met	not allowed

8. Additional information on the educational component

<https://cpsm.kpi.ua/>

Approximate list of questions that can be asked on the MCR and credit

1. Purpose of LM, types and structural diagram.
2. Cycle diagram of LM work.
3. Types of LM locking mechanisms.
4. Types of injection mechanisms.
5. Calculation of structural parameters of the LM MZ.
6. Calculation of design parameters of the injection mechanism.
7. Calculation of the strength of the MZ LM.
8. Calculation of the strength of the injection mechanism.
9. Calculation of columns of MZ LM.
10. Describe the layout diagrams of a pressure machine.
11. Describe the layout diagrams of a blow molding machine.
12. Purpose and functions of the head for extrusion blow molding.
13. Describe the essence and list the varieties of pneumatic vacuum forming methods.
14. Present the structural diagrams of pneumatic-vacuum forming machines.

15. Describe the sequence of calculating the parameters of the machine and pneumatic-vacuum systems.
16. Name the purpose, classification, and layout of polymer injection molding machines.
17. Describe the design and operating principle of polymer injection molding machines.
18. Provide a work flow chart and a method for calculating the productivity of a polymer injection molding machine.
19. Describe the design variations of polymer preparation and mold filling mechanisms, and the principle of their operation.
20. Describe the design of injection mechanisms.
21. Draw examples of designs of check valves and nozzles.
22. Describe the basic parameters and draw examples of designs of hydraulic and lever-hydraulic closing mechanisms.
23. Give the methodology for calculating closing mechanisms.
24. Describe the design and manufacture of levers, columns, fingers, bushings, and plates.
25. Provide cycle diagrams and the method for calculating cycle components and VM performance.
26. Give the method for calculating the design and technological parameters of the PV machine and pneumatic-vacuum systems.
27. Draw the structural and layout diagrams and the principle of operation of blow molding machines (BMs).
28. Present the work cycle diagrams and provide a method for calculating the cycle components and the productivity of the VM.
29. Draw the design and describe the principle of operation of machines for pneumatic-vacuum forming.
30. Provide a method for calculating the structural and technological parameters of the machine and pneumatic-vacuum systems.
31. Identify the purpose and main types of polymer injection molding machines (IMM).
32. Name and describe the main stages of the LM work cycle.
33. How does the structure of the cycle chart affect the performance of the machine?
34. Describe the structural and layout diagrams of LM.
35. The principle of operation of the injection mechanism. The main types of injection mechanisms.
36. Design and functions of the screw in an injection molding machine.
37. What types of closing mechanisms are used in LM? Their comparison.
38. Explain the differences between hydraulic and lever-hydraulic closing mechanisms.
39. Methodology for calculating the closing force in injection molding machines.
40. How do temperature and pressure affect the quality of the casting in injection molding?
41. Purpose of blow molding machines and their classification.
42. Describe the operating principle of a continuous blow molding machine.
43. Describe the structural and layout diagram of a blow molding machine.
44. How is the wall thickness of a product determined during the blow molding process?
45. What types of molds are used in blow molding?
46. Purpose and principle of operation of equipment for pneumatic vacuum forming.
47. What parameters affect the quality of pneumatic vacuum forming products?
48. Describe the equipment for rotational molding of polymers.
49. What is the principle of centrifugal forming and typical areas of its application?
50. What types of defects are typical for products obtained by vacuum and rotational molding methods, and how can they be avoided?

Work program educational component (syllabus):

Compiled Prof., Ph.D., Sivetsky V.I.

Approved by the department ____KhPSM____ (minutes No. 17 dated 04.06.2025)

Agreed Methodological Commission of the Faculty of Chemical Engineering (Minutes No. 11 dated 06/27/2025)