## Syllabus educational component of the elective discipline Estimating business in transport construction

Name of the discipline:	Estimating business in transport construction
Level of higher education:	first (bachelor)
	https://dl2022.khadi.kharkov.ua/course/index.php?categoryid=211
Course page in Moodle:	
The volume of the	3 credits (90 hours)
educational component	
Form of final control	Offset
Consultations:	on schedule
Name of the	Department of bridges, structures and construction mechanics
department:	named after V.O. Rosiyskiy
Language of instruction:	Ukrainian, English
Course leader:	Synkovska Olena, PhD, Associate Professor
Contact phone number:	(057) 7073722
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## Summary of educational component:

**The goal** is the formation of students' basic knowledge and skills, general and professional competences in matters of pricing when drawing up projects for the construction of transport (bridge and tunnel) structures, in accordance with the requirements of modern regulatory documents and the needs of the industry for further professional activity.

**Subject:** theoretical and practical bases of pricing when drawing up projects for the construction of transport (bridge and tunnel) structures, in accordance with the requirements of modern regulatory documents and the needs of the industry

## The main tasks of studying an academic discipline are:

- mastering the basic rules for determining the estimated cost of construction of artificial structures;
- determination of the order of development, structure and content of basic estimate documents, pricing system in construction;
- formation of skills for working with estimated standards;
- determination of the composition and scope of construction works according to project documentation;
- formation of skills for developing separate sections of estimates

## Prerequisites for studying the educational component:

Mathematics; Informatics; Basics and foundations; Building structures and architecture; Bridge design; Transport tunnels; Economics of construction; Designing roads and bridge crossings; Occupational Health.

## Competencies acquired by the applicant:

## General competencies:

- Knowledge and understanding of the subject area and professional activity.
- Ability to use information and communication technologies
- Ability to communicate with representatives of other professional groups at different levels (with experts from other fields of knowledge/types of economic activity)/

## Professional competences:

- The ability to critically understand and apply the main theories, methods and principles of economics and management for the rational organization and management of construction production
- Ability to design construction structures, buildings, bridge and tunnel structures taking into account engineering and technical, geological and hydrological features and resource-saving measures, legal, social, ecological, technical and economic indicators, scientific and ethical aspects, and modern requirements of regulatory documentation in the field of architecture and construction, environmental protection and labor safety.
- The ability to choose and use appropriate equipment, materials, tools and methods for designing and implementing technological processes of construction production

## Learning outcomes according to the educational program:

- Design and implement technological processes of construction production, using appropriate equipment, materials, tools and methods.
- Use and develop technical documentation at all stages of the life cycle of construction products.
- Apply modern information technologies to solve engineering and management problems of construction and civil engineering.
- Assess the compliance of projects with the principles of designing urban territories and infrastructure facilities and urban economy

		Number of		
no. of topics		hours		
	Name of topics (LC, PR, SR)	Full -	Part -	
		time	time	
	Lo Oseren la revisione en eleterreirien the cost of construction	learning	learning	
	LC General provisions on determining the cost of construction	2	2	
1	PR Search for regulatory documents using the Budstandard Online service	2	2	
	SR Work with Budstandard Online regulatory documentation	4	4	
	LC Procedure for drawing up investor estimate documentation	2	2	
2	PR Pricing system in construction (main provisions and types of estimate documents)	4	4	
_	SR Work with Budstandard Online regulatory documentation service	4	4	
	LC Preparation of local estimates. Taking into account the influence of the conditions of work performance	2	2	
3	PR Basics of the estimate program Construction technologies: Estimate 8	2	2	
	SR Search for estimates using a PC Construction technologies - Estimate 8	4	4	
4	LC The procedure for determining the amount of costs for the purchase of equipment. Rules for calculating general production costs	2	2	
	PR Calculation of the local estimate	2	2	
	SR Calculation of a local estimate for an individual task	6	6	
5	LC The composition of other expenses according to chapters 1- 12 of the consolidated estimate. The procedure for drawing up a	2	2	

#### Thematic plan

	consolidated estimate		
	PR Calculation of direct costs when drawing up an investor		•
	estimate	6	6
	SR Solving problems on the calculation of direct costs when	6	6
	drawing up an investor estimate	0	0
	LC The procedure and rules for calculating costs, which are		
	included in the summary of chapters 1-12 to the consolidated	2	2
	estimate calculation		
6	PR Calculation of the local estimate in the Building technologies	-	-
_	program: Estimate 8. Installation, dismantling and purchase of	6	6
	equipment		
	SR Elaboration of drawing up a local estimate in the	6	6
	Construction rectinologies program. Estimate 8 by task		
	formation of contractual prices. Determining the amount of direct	2	2
	costs	2	2
7	PR Calculation of general production costs. Calculation of the		
	object estimate	6	6
	SR Solving problems on the calculation of general production	•	•
	costs. Calculation of the object estimate by task	6	6
	LC Formation of contractual prices. Calculation of general		
	production costs by calculation and analytical method.	2	2
	Calculation of additional costs when forming the contract price		
	PR The main principles of calculating the level of wages, the		
_	cost of operating machines and mechanisms and the current	4	4
8	cost of materials, products, structures when drawing up the	•	
	price of a tender offer		
	SR Solving the problems of calculating the level of wages, the		
	cost of operating machines and mechanisms and the current	6	6
	cost of materials, products, structures when compiling the price		
		16	16
Total		01	10
Total		32 42	3Z 42
		42	42

## Individual educational and research task (if available):

## Teaching methods:

1) verbal: 1.1 traditional: lectures, explanations, stories, etc.;

1.2 interactive (non-traditional): problem lectures, discussions, etc.;

2) visual: method of illustrations, method of demonstrations

3) practical: 3.1 traditional: practical classes, seminars;

3.2 interactive (non-traditional seminars-discussions, "round table".

# **Evaluation system and requirements:**

# Current academic performance

**1** The current performance of applicants for the performance of educational activities in the classroom and for the performance of independent work is assessed using a four-point grading scale with the subsequent conversion to a 100-point scale. When assessing current progress, all types of work provided by the curriculum are taken into account.

**1.1** Lecture classes are evaluated by determining the quality of specific tasks.

**1.2** Practical classes are assessed by the quality of the control or individual task, performance and design of practical work.

**1.3** Laboratory classes are evaluated by the quality of laboratory reports.

**1.4** Seminar classes are evaluated by the quality of individual assignments / essays.

**2** Evaluation of the current progress of higher education students is carried out at each practical lesson (laboratory or seminar) on a four-point scale ("5", "4", "C", "2") and recorded in the academic record book.

- "excellent": the applicant has flawlessly mastered the theoretical material, demonstrates deep knowledge of the relevant topic or discipline, the main provisions;

- "good": the applicant has mastered the theoretical material well, knows the main aspects of the primary sources and recommended literature, reasonably presents it; has practical skills, expresses his thoughts on certain problems, but makes certain inaccuracies and errors in the logic of the presentation of theoretical content or in the analysis of practical content;

- "satisfactory": the applicant has basically mastered the theoretical knowledge of the subject or discipline, is oriented in the primary sources and recommended literature, but unconvincingly answers, confuses concepts, hesitates to answer additional questions, does not have stable knowledge; answering questions of a practical nature, shows inaccuracy in knowledge, is unable to evaluate facts and phenomena, to relate them to the future profession;

- "unsatisfactory": the applicant has not mastered the educational material of the topic (discipline), does not know scientific facts, definitions, is almost not oriented in primary sources and recommended literature, there is no scientific thinking, practical skills are not formed.

**3** The final score for the current activity is recognized as the arithmetic mean of points for each class, for individual work, current control works according to the formula:

$$\mathbf{K}^{curr} = \frac{\mathbf{K}\mathbf{1} + \mathbf{K}\mathbf{2} + \dots + \mathbf{K}\mathbf{n}}{n}$$

where K<sup>curr</sup> is the final assessment of success based on the results of the current control;

K1,K2,...,Kn - assessment of the success of the n current control measure;

- *n* - number of current control measures.

Scores are converted into points according to the conversion scale (Table 1).

4-point scale	100-point scale	4-point scale	100-point scale	4-point scale	100- point scale	4-point scale	100-point scale
5	100	4,45	89	3,90	78	3,35	67
4,95	99	4,4	88	3,85	77	3,3	66
4,9	98	4,35	87	3,80	76	3,25	65
4,85	97	4,3	86	3,75	75	3,2	64
4,8	96	4,25	85	3,7	74	3,15	63
4,75	95	4,20	84	3,65	73	3,1	62
4,7	94	4,15	83	3,60	72	3,05	61
4,65	93	4,10	82	3,55	71	3	60
4,6	92	4,05	81	3,5	70	from 1.78 to 2.99	from 35 to 59
						reassen	nbly
4,55	91	4,00	80	3,45	69	from 0 to 1.77	from 0 to 34
4,5	90	3,95	79	3,4	68	re-examir	nation

Table 1 - Conversion of the average score	or the current activity into a multi-point scale
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# Final evaluation

**1** A higher education student receives a credit at the last class of the discipline based on the results of the current assessment. The average grade for the current activity is converted into points on a 100-point scale, according to the conversion table (Table 1). Higher education applicants who have a current average grade in the discipline below "3" (60 points) in the last class can increase their current score by taking tests in the discipline.

Assessment of knowledge of applicants by testing is carried out on a scale:

- "Excellent": at least 90% of correct answers;
- "Very good": from 82% to 89% of correct answers;
- "Good": from 74% to 81 % of correct answers;
- "Satisfactory": from 67% to 73% of correct answers;
- "Satisfactory enough": from 60% to 66% of correct answers;
- "Unsatisfactory": less than 60% of correct answers.
- 2 The condition for receiving credit is:
- working off all missed classes;
- the average current grade in the discipline is not lower than "3" (60 points).

**3** Additional points are awarded for individual independent work and participation in scientific events.

**3.1** Additional points are added to the sum of points gained by the applicant for higher education for the current educational activity (for disciplines, the final form of control for which is a test), or to the final grade in the discipline, the final form of control for which is an exam.

**3.2** The number of additional points awarded for different types of individual tasks depends on their volume and significance:

- prizes in the discipline at the international / all-Ukrainian competition of scientific student works - 20 points;

- prize places in the discipline at the national competitions - 20 points;

- participation in the international / all-Ukrainian competition of scientific student works - 15 points

- participation in international/national scientific conferences of students and young scientists - 12 points;

- participation in national competitions in the discipline - 10 points

- participation in Olympiads and scientific conferences of KhNADU in the discipline - 5 points;

- performance of individual research (educational and research) tasks of increased complexity - 5 points.

**3.3** The number of additional points cannot exceed 20 points.

4 The learning outcome is evaluated (select the required):

- on a two-point scale (passed/not passed) according to Table 2;

- on a 100-point scale (knowledge assessment scale) according to Table 3.

The final score together with additional points cannot exceed 100 points.

Table 2 - Scale	of points	conversion	to the	national	evaluation system
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On a 100-point scale	On a national scale
from 60 points to 100 points	enrolled
less than 60 points	unaccounted for

 Table 3 - Scale for assessing the knowledge of students based on the results of the final control of the discipline

Score	Assessr	ment on	Evaluation according to the ECTS scale		
in	the national scale		Evaluation	Criteria	
points	ovor	aradit			
90-	exam	credit	Δ	The theoretical content of the course is mastered	
100	s great. rolled			completely, without gaps, the necessary practical skills of working with the mastered material are formed, all the training tasks provided by the	
	That	Ш		training program are completed, the quality of their implementation is estimated by the number of points close to the maximum	
80–89	ay		В	The theoretical content of the course is mastered completely, without gaps, the necessary practical skills of working with the mastered material are basically formed, all the training tasks provided by the training program are completed, the quality of most of them is estimated by the number of points close to the maximum	
75-79	ю	rolled	С	The theoretical content of the course is fully mastered, without gaps, some practical skills of working with the mastered material are insufficiently formed, all the training tasks provided by the curriculum are completed, the quality of any of them is not assessed by the minimum number of points, some types of tasks are performed with errors	
67-74	factory	E	D	The theoretical content of the course is partially mastered, but the gaps are not significant, the necessary practical skills of working with the mastered material are basically formed, most of the training tasks provided by the curriculum are completed, some of the completed tasks may contain errors	
60–66	Satis		E	The theoretical content of the course is partially mastered, some practical skills have not been formed, many of the training tasks provided by the curriculum have not been completed, or the quality of some of them is estimated by the number of points close to the minimum.	
35–59	Unsatisfactory	enrolled	FX	The theoretical content of the course is partially mastered, the necessary practical skills have not been formed, most of the learning tasks provided by the curriculum have not been completed, or the quality of their implementation is estimated by the number of points close to the minimum; with additional independent work on the course material, it is possible to improve the quality of learning tasks (with the possibility of repeating)	
0–34	Unsatisfactory	Not	F	The theoretical content of the course has not been mastered, the necessary practical skills have not been formed, all completed training tasks contain gross errors, additional independent work on the course material will not lead to any significant improvement in the quality of training tasks (with a mandatory repeated course)	

### Policy of the course:

- the course involves teamwork, the environment in the classroom is friendly, creative, open to constructive criticism;

- mastering the discipline involves mandatory attendance of lectures and practical classes, as well as independent work;

- independent work involves the study of individual topics of the discipline, which are submitted in accordance with the program for independent study, or were considered briefly;

- all tasks provided by the program must be completed in due time;

- if the applicant for higher education is absent from classes for a valid reason, he/she presents the completed tasks during independent preparation and consultation of the teacher;

- the term paper must be defended no later than one week before the start of the examination session *(indicated if available);* 

- while studying the course, higher education students must adhere to the rules of

academic integrity set out in the following documents: "Rules of academic integrity of participants of the educational process of KNADU" (https://www.khadi.kharkov.ua/fileadmin/P Standart/pologeniya/stvnz 67 01 dobroch 1.p df), "Academic integrity. Checking the text of academic, scientific and qualification papers forplagiarism " (https://www.khadi.kharkov.ua/fileadmin/P Standart/pologeniya/stvnz 85 101.pdf), "Moral and ethical code of participants in the educational process of KNADU (https://www.khadi.kharkov.ua/fileadmin/P Standart/pologeniya/stvnz 67 01 MEK 1.pdf).

- in case of detection of the fact of plagiarism, the applicant receives 0 points for the task and must repeat the tasks provided in the silabus;

cheating during tests and exams is prohibited (including using mobile devices). Mobile devices are allowed to be used only during online testing.

**Recommended literature:** (literature no later than 10 years old, except for 1 fundamental classical textbook or monograph)

1 DSTU B D.1.1-1:2013 Pravyla vyznachennya vartosti budivnytstva. - Kyyiv: Minrehionbud Ukrayiny, 2013. – 97s.

2. DSTU-N B D.1.1-2:2013 Nastanova shchodo vyznachennya pryamykh vytrat u vartosti budivnytstva. - Kyyiv: Minrehionbud Ukrayiny, 2013. – 24s.

3. DSTU-N B D.1.1-3:2013 Nastanova shchodo vyznachennya zahal'novyrobnychykh i administratyvnykh vytrat ta prybutku u vartosti budivnytstva. - Kyyiv: Minrehionbud Ukrayiny, 2009. – 41s.

4. DSTU B D.2.7-1:2012 Resursni koshtorysni normy ekspluatatsiyi budivel'nykh mashyn ta mekhanizmiv. - Kyyiv: Minrehionbud Ukrayiny, 2013. – 116s.

5. Tsinoutvorennya u budivnytstvi – zbirnyk ofitsiynykh dokumentiv ta roz"yasnen'.

6. Ol'khovyk O.I., Bilets'kyy A.A., Klimov S.V. Tsinoutvorennya ta koshtorysna vartist' budivnytstva: Navchal'nyy posibnyk. – Rivne: NUVHP, 2014. – 271 s.

7. Avtomatyzyrovannoe opredelenye stoymosty stroytel'stva rukovodstvo k prohrammnomu kompleksu AVK-5. Dnepropetrovsk – Lutsk: NPF «AVK SOZYDATEL'», 2008.- 116 s.

#### Additional sources:

- 1. distance course: <u>https://dl2022.khadi.kharkov.ua/course/index.php?categoryid=211</u>
- 2. State construction standards of Ukraine: DBN, DSTU, SNiP, GOST, SN, VBN. http://dbn.at.ua/

Developer(s)

the syllabus of the academic discipline \_\_\_\_

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