

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
POLTAVA STATE AGRARIAN UNIVERSITY

Mechanical and electrical engineering department

TRAINING COURSE SYLLABUS

**TECHNICAL RATE SETTING IN AGRICULTURAL
PRODUCTION**

(faculty selective course)

training program	Machines and equipment of agricultural production
specialty	133 Industrial engineering
field of knowledge	13 Mechanical engineering
degree	MSc
faculty	Engineering and technology

Developed by:
Petrash Oleksandr, PhD, associate professor at
mechanical and electrical engineering department

Poltava
2022

Course description and the developer information

Course name	Technical rate setting in agricultural production
Department's name	Mechanical and electrical engineering department
Contacts of developers involved in training	Educator: Petrash Oleksandr, PhD, associate professor at mechanical and electrical engineering department Contacts: room 326 (academic building #3). e-mail: oleksandr.petrash@pdaa.edu.ua phone: (099) 918-65-32 educator's page: https://www.pdau.edu.ua/people/petrash-oleksandr-vasylovyh
Degree	Second (master's) degree
Specialties	Specialties of engineering and technology faculty
Course study preconditions	«Technological aspects of quality control of engineering products», «Operation of machines and equipment», «Engineering and project management»

Expected training outcomes:

Course study purpose systematize and comment on current regulatory documents used in the preparation of investor estimate documentation for construction, expansion, reconstruction, technical re-equipment of enterprises of the national economy of Ukraine; acquisition by a student of the necessary information on the issues of labor standardization, preparation of estimate documentation, and reliable determination of the projects' cost.

Course tasks: the use of technical standardization for the rationalization of the technology of manual and mechanized production and the preparation of the work execution project; establishing unified limits on the cost of manpower, materials, finances, and time for project execution; use of software complexes for automated preparation of investor estimate documentation; corruption prevention in the financial resources utilizing; optimization of the investment project in terms of price and resources.

Competencies:	
general	special
GC 1. Ability to use information and communication technologies. GC 2. Ability to learn and master modern knowledge. GC 3. Ability to search, process and analyze information from various sources. GC 7. Ability to identify, set and solve problems. GC 8. Ability to make justified decisions.	SC 1. The ability to create, improve and apply quantitative mathematical, scientific, and technical methods and computer software tools, to apply a systematic approach to solving engineering problems of industrial mechanical engineering, particularly in conditions of technical uncertainty. SC 5. The ability to develop and implement plans and projects in the field of mechanical engineering and related activities, to carry out relevant business activities.
Program training results:	
TR 1. Be able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.	

Program and structure of the training course:

Topics	Course duration, hours			
	full time study (ZS(ITF)_md_2022(FK))			
	Total	Including		
lec.		prac.	s.g.	
Topic 1. Technical standardization.	20	4	6	10
Topic 2. Determining the scope of work and required resources.	40	4	6	30
Topic 3. Cost estimation trade.	40	4	6	30
Topic 4. Analysis and optimization of the investor cost estimation documentation.	20	4	6	10
Total hours	120	16	24	80

Training results scoring
Control types (full time study)

Program training results	Students' training results control types		
	Self-guided work	Exercises execution at practical classes	Total
TR 1. Be able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.	40	60	100

Training course scoring scheme (full time study)

Topics	Students' training results control type		
	Self-guided work	Exercises execution at practical classes	Total
Topic 1. Technical standardization.	10	15	25
Topic 2. Determining the scope of work and required resources.	10	15	25
Topic 3. Cost estimation trade.	10	15	25
Topic 4. Analysis and optimization of the investor cost estimation documentation.	10	15	25
<i>Total</i>	40	60	100

Scoring criteria for the exercises performance at practical classes (0-5 points)

Points	Criteria for the training results evaluation
5	The student possesses the material completely, and correctly performed practical tasks, which indicates the assimilation of learning outcomes, namely, being able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.
3	The student does not fully master the material (superficially), significant inaccuracies and errors were made when performing practical tasks, which indicates an insufficient level of assimilation of training outcomes, namely, being able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.
0	There is no completion of the task, which does not provide an opportunity to assess the formation of competencies and obtaining program training results.

**Scoring criteria for the exercises performance during self-guided work
(0-10 points for each work)**

Points	Criteria for the training results evaluation
10	The student completely mastered the material, and correctly completed the tasks of self-guided work, which indicates the assimilation of the training results, namely, being able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.
5	The student does not fully master the material (superficially), significant inaccuracies and errors were made when performing self-guided work, which indicates an insufficient level of assimilation of training results, namely, being able to compile, analyze and optimize cost documentation for investment projects where the mechanization of work is used.
0	There is no completion of the task, which does not provide an opportunity to assess the formation of competencies and obtaining program training results.

Course capacity:

Total number of hours – 120 hours.

Credits amount – 4,0.

Term control type – pass.

Training course's policy

Deadline and reschedule policy: All program tasks must be completed by the deadline. Tasks that are submitted late without good reason are scored at a lower grade (75% of the possible maximum number of points for the type of activity).

Academic Integrity Policy: Copying during assignments is prohibited (including using mobile devices). Mobile devices are allowed to be used only during online testing. Documents related to academic integrity are listed on the page ACADEMIC INTEGRITY of PDAU: <https://www.pdaa.edu.ua/content/akademichna-dobrochesnist>.

Attendance Policy: Attendance is mandatory; if there is an individual schedule, the cooperation between the student and the educator takes place according to this schedule.

There is a possibility of mastering this raining course under academic mobility programs (domestic/international) based on existing agreements (contracts) between the University and a partner institution and/or individual invitations.

The students are entitled to the recognition of training results acquired in non-formal/informal education before mastering this educational component. Acquiring relevant training results is possible after the successful completion of courses (with documentary evidence) on various educational platforms, in particular: Prometheus, Coursera etc.

Additional materials for the presentation of the training course:

Presentations, video clips.

Recommended references:

Main

1. Umanska, V. H., & Shkolna, D. R. (2017). Osoblyvosti orhanizatsii, kontroliu ta normuvannia pratsi v umovakh rynkovoï ekonomiky. *Ekonomika i suspilstvo*, (9), 935-939.
2. Kovalova, O. M., & Kovalëva, O. M. (2020). Rol normuvannia pratsi v systemi upravlinnia trudovym potentsialom.
3. Kovalova, O. M., & Kovalëva, O. M. (2020). Rol normuvannia pratsi v systemi upravlinnia trudovym potentsialom.
4. Arapov, O. S., & Doroshenko, T. M. (2017). Normuvannia pratsi yak faktor pidvyschennia efektyvnosti vyrobnytstva. *Ekonomichniy analiz*, 27(4), 188-195.
5. Mashoshyna, T. V. (2020). Koshtorysna sprava.
6. Mislick, G. K., & Nussbaum, D. A. (2015). *Cost estimation: Methods and tools*. John Wiley & Sons.
7. Jorgensen, M., & Shepperd, M. (2006). A systematic review of software development cost estimation studies. *IEEE Transactions on software engineering*, 33(1), 33-53.

Supplementary

1. Kodeks zakoniv pro pratsiu: Zakon Ukrainy z zminamy vid 19.07.2022 r. № 2434-IX. <https://zakon.rada.gov.ua/laws/show/322-08#Text> (acquisition date: 6.09.2022).
2. Boehm, B., Abts, C., & Chulani, S. (2000). Software development cost estimation approaches – A survey. *Annals of software engineering*, 10(1), 177-205.
3. Petrash O.V. Materialoïemnist gruntosementnykh pal, vyhotovlenykh za burozmishuvalnoiu tekhnolohiieiu / M.O. Korshunov, O.V. Petrash // *Materialy vseukrainskoi internet-konferentsii molodykh uchenykh i studentiv «Problemy i perspektyvy staloho rozvytku ta prostorovoho planuvannia terytorii»*, 18 ber. 2015 r. [Tekst]. – Poltava: PoltNTU im. Yu. Kondratiuka, 2015 r. – 305 s.
4. Normatyvni doslidzhennia burozmishuvalnoi tekhnolohii vyhotovlennia gruntosementnykh pal / M.L. Zotsenko, S.S. Petrash, R.V. Petrash, O.V. Petrash, N.M. Popovych // *Naukovi visnyk budivnytstvo*. – Kharkiv, 2016. – Vyp. 2 (84). – S. 211 – 223.

Web resources

1. Service for working with regulatory documents of the construction industry. <http://online.budstandart.com/ua/>.
2. Distance course for specialty 133 Industrial mechanical engineering from the discipline: "Technical rate setting in agricultural production" (2022-2023) Poltava State Agrarian University. URL: <https://moodle.pdaa.edu.ua>