**Syllabus**

**of the educational component EC03**

(conditional designation EC in the educational program (EP))

**Undergraduate practice**

|  |  |
| --- | --- |
| Subject | **Undergraduate practice** |
| Level of higher education: | **Second (master’s degree)** |
| Field of knowledge: | **19«Architecture and construction»** |
| Specialty:  | **192 «Construction and civil engineering»** |
| Educational and professional (Educational and scientific) program: | **Highways and airfields** |
|  Page on the Moodle:  | [*https://dl2022.khadi.kharkov.ua/course/view.php?id=3765*](https://dl2022.khadi.kharkov.ua/course/view.php?id=3765) |
| Year of study: | **1** |
| Semester: | **2 (spring)** |
| Volume of the educational component | **6 credits (180 hours)** |
| Final control form | **Defense of the report on the undergraduate practice** |
| Consultations: | **on schedule** |
| Name of the department: | **Department of Highway Building and Maintenance** |
| Teaching language: | **Ukrainian** |
| Head of the course: | **Арінушкіна Н.С., к.т.н., доцент** |
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**Brief content of the educational component:**

**The goal** is to consolidate the theoretical knowledge acquired during the training period and use it for making independent professional decisions, studying the production and economic activities of road industry enterprises, the latest technological processes in the construction and maintenance of highways, the manufacture of road construction materials, products and structures, acquisition of practical skills in performing their duties, gaining an experience of working in a team, preparing for an independent work in management positions in the construction industry, as well as conducting research on the topic of the final qualification work.

**Subject:** theoretical and methodological foundations of production activity at the modern stage of the road industry work.

**The main tasks of the academic discipline studying are:**

‒ study and practical application of methods and means of organizational and technical issues solving within the scope of job duties of engineering and technical workers of organizations;

‒ familiarization with the organizational and management structure and with interaction of various units of organizations;

‒ familiarization with the methods of the construction and maintenance organization of highways;

‒ study of economics, accounting and reporting in organizations;

‒ study of technological processes of highway construction and maintenace;

‒ familiarization with the operation of the production enterprises material and technical support system;

‒ study of the composition and practical application of work organization projects (WOP), work execution projects (WEP), preparation of technological maps for certain types of work;

‒ familiarization with methods, devices and equipment for works quality control and their preparation for usage;

‒ mastering of the tariff and technical regulation orders, remuneration of workers, employees and engineering and technical personnel and acquiring skills in keeping documentation on management functions;

‒ study of technical and economic solutions used at enterprises regarding labor organization and material stimulation of workers;

‒ gaining of the experience in managerial and educational work in the labor collective;

‒ collection of the necessary materials for the completion of the research work;

‒ collection of initial data for the actual thesis;

‒ solving of the organizational issues related to the preparation of the employment contracts;

‒ coordinating of the diploma theses subject with the needs of production, obtaining orders for the implementation of the real diploma project.

**Prerequisites for the educational component studying:** EC 4 Innovative technologies of highway construction; EC 5 Innovative directions of highways maintenance; EC 7 Technology of scientific research; EC 8 Computer modelling.

**Competences accuired by the accuirer:**

***Integral competence:*** Integral competence: The ability to solve problems of a research and/or innovative nature in the field of construction and civil engineering.

***General competences:***

GC01. Ability to abstract thinking, analysis and synthesis.

GC02. Ability to conduct research at an appropriate level.

GC04. Ability to make reasoned decisions.

***Special (professional) competences:***

SC01. The ability to integrate specialized conceptual knowledge in the field of construction and maintenance of highways, combined with compliance with valid regulatory and legal documents in the field of architecture and construction, to solve complex engineering problems in accordance with the specialization.

SC08. Ability to integrate knowledge from other fields to solve complex problems in broad or multidisciplinary contexts.

***Learning results according to the educational program:***

LR10. To collect the necessary information using scientific and technical literature, databases and other sources, to analyze and evaluate it.

LR14. To plan and carry out scientific and applied research in the field of highway and airfield construction, choose effective research methods, argue conclusions, present research results.

**Thematic plan**

| № topic | Topic names (LC, LW, PW, IT, IW) | Hours |
| --- | --- | --- |
| full-time | correspondence |
| 1 | Training on occupational safety and familiarization with the job description, which establishes the functions, duties, rights and responsibilities of a person. | 10 | 10 |
| 2 | The analysis of existing methods and ways of solving scientific and research problems corresponding to the topic of the individual task of the intern student. Study of the theoretical foundations of the scientific problem. | 30 | 30 |
| 3 | Acquaintance with the methodical materials, literature on issues related to the content of practice, selection and study of material in accordance with individual tasks. | 40 | 40 |
| 4 | Conducting of the analysis and theoretical research on the topic of the master's qualification thesis. | 80 | 80 |
| 5 | Generalization of materials and preparation of a practice report. | 20 | 20 |
| **Total** |  | 180 | 180 |

The topic of individual tasks of intern students depends on the selected topic of the qualifying work, which the applicants choose from the list of topics proposed by the graduating department, or on their own topic that meets the requirements and direction of the graduating department. Subjects of individual tasks of intern students, which correspond to the final qualification work, must correspond to the objects of professional activity of graduates in the specialty 192 "Construction and civil engineering" under the educational and professional program "Motorways and airfields".

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

**Teaching methods:**

**1) verbal: 1.1 traditional: lectures, explanations, stories, conversations, discussions, work with books, etc.; 2) visual: method of illustration and demonstration,**

**3) practical: 3.1 traditional: practical classes;**

**3.2 interactive (non-traditional): business and role-playing games, trainings, case method.**

**Final assessment**

**1** After completing the practice (scientific research internship), the applicants must prepare and submit to the department a report on the implementation of its program and individual task. This document must be signed by the head of the practice base division. After defense, the report is kept at the department for three years.

The report, together with a referral to practice, an individual task and a diary (if available), is submitted for evaluation to the supervisor of the practice from the university.

**2** The final control of the results of practice (research internship) is carried out according to the department's consultation schedule.

**3** Candidates who have fulfilled the requirements of the practice program (research internship) are allowed to defend their practice (research internship) reports. The defence of the reports takes place in the commission appointed by the head of the department.

**4** Evaluation of the practice results is carried out expertly. The grade for practice is calculated as the sum of points based on the results of practice tasks (research internship), report preparation and its defense in accordance with Table 1.

The evaluation takes into account the review of the head of the practice base unit (research internship).

**Table 1 –** Criteria for knowledge evaluation based on the results of undergraduate practice

| Evaluation criteria | Points |
| --- | --- |
|  Completion of tasks of undergraduate practice | **78** |
| Preparation of documents for practice | 3 |
| Instruction on safety precautions and occupational health and safety | 5 |
| Participation in the performance of production tasks at workplaces | 40 |
| Collection of materials for diploma  | 10 |
| Usage of the latest information sources, current regulatory and legislative documents | 5 |
| Creative approach to problem analysis, scientific novelty of research results and use of computer technologies | 5 |
| Availability of necessary materials in the report (photos, tables, graphs, diagrams, appendixes) | 5 |
| The validity of the conclusions and the practical significance of the proposals | 5 |
| Preparation and execution of the report | **20** |
| Compliance with current standards regarding the design of the report as a whole (title page, content, structure, links to the information sources) | 15 |
| Compliance with current standards regarding the design of tables, formulas, graphic illustrations and information sources | 5 |
| The report defence | **2** |
| Total | 100 |

**5** The final assessment of the practice report is determined according to the scale given in Table 2.

Table 2 – The scale for evaluating the knowledge of students based on the results of the final control of the academic discipline

| Evaluation in points | Evaluation on a national scale | Evaluation according to the ECTS scale |
| --- | --- | --- |
| Mark | Criteria |
| examination | credit |
| **90-100** | **excellent** | **credited** | **A** | The theoretical content of the course has been mastered in its entirety, without gaps, the necessary practical skills for working with the mastered material have been formed, all educational tasks provided for in the training program have been completed, the quality of their performance has been assessed with a number of points close to the maximum |
| **80-89** | **good** | **credited** | **B** | The theoretical content of the course has been mastered in its entirety, without gaps, the necessary practical skills for working with the mastered material have mainly been formed, all educational tasks provided for by the training program have been completed, the quality of most of them has been assessed with a number of points close to the maximum |
| **75-79** | **С** | The theoretical content of the course has been mastered in its entirety, without gaps, some practical skills of working with the mastered material have not been formed enough, all educational tasks provided for by the training program have been completed, the quality of none of them has been evaluated with a minimum number of points, some types of tasks have been completed with errors |
| **67-74** | **satisfactory** | **D** | The theoretical content of the course is partially mastered, but the gaps are not significant, the necessary practical skills for working with the mastered material are basically formed, most of the educational tasks provided by the training program have been completed, some of the completed tasks may contain errors |
| **60-66** | **E** | The theoretical content of the course has been partially mastered, some practical work skills have not been formed, many educational tasks provided by the training program have not been completed, or the quality of some of them has been assessed with a number of points close to the minimum. |
| **35-59** | **unsatisfactory** | **Not credited** | **FX** | The theoretical content of the course has been partially mastered, the necessary practical work skills have not been formed, most of the prescribed training programs of educational tasks have not been completed, or the quality of their implementation has been assessed with a number of points close to the minimum; with additional independent work on the course material, it is possible to improve the quality of the performance of educational tasks (with the possibility of retaking) |
| **0-34** | **unacceptable** | **F** | The theoretical content of the course has not been mastered, the necessary practical work skills have not been formed, all completed educational tasks contain gross errors, additional independent work on the course material will not lead to any significant improvement in the quality of the performance of educational tasks (with a mandatory repeat course) |

**Course policy:**

– the course involves working in a team, 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 academic discipline, which are presented in accordance with the program for independent study, or were considered briefly;

– all tasks provided by the program must be completed within established term;

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

- while studying the course, students of higher education must adhere to the rules of academic integrity given in the following documents: "Rules of academic integrity of participants in the educational process of the KHNAHU" (<https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_67_01_dobroch_1.pdf>), "Academic integrity. Checking the text of academic, scientific and qualification works for plagiarism" (<https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_85_1_01.pdf>), "Moral and ethical code of participants in the educational process of the KHNAHU” (<https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_67_01_MEK_1.pdf>).

– in case of detection of plagiarism, the applicant receives 0 points for the task and must repeat the tasks provided for in the syllabus;

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

**Recommended literature:**

1. The rules of labor protection during the construction, repair and maintenance of highways. NPAOP 63.21-1.01-2009. Kyiv: 2010. 31 p. [State regulations on labor protection].
2. Zatserkovny V. Methodology of scientific research: teaching. manual / V. Zatserkovny, I. Tishaev, V. Demidov. Nizhin: NSU named after M. Gogol, 2017. – 236 p.
3. Vazhynskyi S., Shcherbak T. V. Methodology and organization of scientific research: Education. manual / S. Vazhynskyi, T. Shcherbak. – Sumy: A.S. Makarenko Sumy DPU, 2016. – 260 p.
4. M. I. Adamenko Fundamentals of scientific research / M. I. Adamenko, M. V. Beilin. – Kh.: V. N. Karazin KhNU, 2014. – 188 p.
5. Basics of methodology and organization of scientific research: Education. manual for students, cadets, graduate students and adjuncts / edited by A. E. Konverskyi. K.: Center of Educational Literature, 2010. - 352 p.
6. Designing of the construction technology of the highways subgrade: training. - method. manual / Savenko V., Slavinska O., Usychenko O.., Feshchenko H. Kyiv: NTU, 2016. 348 p.
7. Systemic aspects of construction, repair and reconstruction of highways and airfields. Technological cards: education. manual / Dmitriev M., Gamelyak I., Dmytrychenko A., Zhuravskyi D. Kyiv: NTU, 2017. 244 p.
8. Basics of highways and airfields maintenance: training. manual / V. Stepura, A. Beliatynskyi, N. Kuzhel - K.: NAU, 2013. - 204 p.
9. Shindor M. The experience of the devices and equipment using developed by the State Enterprise "Road Quality Control" in the road industry of Ukraine / Shindor M., Kipnis D., Vail M. etc. // Roads and road construction. – 2018. No. 103. – P. 98-110.
10. Kostin D. Increasing of the resistance to the accumulation of plastic deformations of crushed stone-mastic asphalt concrete pavements. Kharkiv, 2021.176 p.
11. Novakovska V. Increasing of the heat resistance and water resistance of bituminous binder for surface treatment by modification of emulsions with aqueous cationic latex: dissertation. candidate of technical Sciences: 05.22.11 - highways and airfields. Kharkiv, 2021.171 p.
12. Baran S. Improvements of the design of high-durability road surfaces made of crushed-mastic asphalt concrete: 05.22.11 - highways and airfields. Kyiv, 2020. 220 p.
13. Motor roads: construction, repair, machines and mechanisms for performance of works: training. manual Part 1 / Khmara L., Shipilov O., Musiyko V., Kuzminets M. Kyiv; Dnipropetrovsk: NTU: PDABA. 2011. 416 p.
14. Building materials science in road construction: teaching. manual / V. Mozgovy and others. Kyiv, 2014. 415 p.
15. Transport facilities. Automobile roads. DBN B.2.3-4:2015. [valid from 2015-03-01]. Kyiv: Ministry of Regional Development of Ukraine, 2015. 216 p. [National standard of Ukraine].

**Additional sources:**

1. distance course::

<https://dl2022.khadi.kharkov.ua/course/view.php?id=3765>



Developer(s)

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