



## PRACTICE OF MASTERS OF EDUCATIONAL AND PROFESSIONAL TRAINING

### Working program of the academic discipline ( Syllabus )

#### EDUCATIONAL DISCIPLINE REQUIREMENTS

Level of higher education	<i>Second (master's)</i>
<b>Branch of knowledge</b>	10 Natural sciences
<b>Specialty</b>	101 Ecology
<b>Educational program</b>	Ecological safety
<b>Discipline status</b>	Normative
<b>Form of education</b>	daytime
<b>Year of training, semester</b>	2nd year of study, 3rd semester
<b>Scope of the discipline</b>	14 credits
<b>Terminal control/ control measures</b>	test
<b>Lessons schedule</b>	duration of practice 8 weeks (September-October, according to the University Order)
<b>Language of teaching</b>	Ukrainian
<b>Information about the course leader / teachers</b>	Heads of practice, appointed according to the University Order <a href="https://eco-paper.kpi.ua/pro-kafedru/vykladachi.html">https://eco-paper.kpi.ua/pro-kafedru/vykladachi.html</a>
<b>Information</b>	<a href="https://eco-paper.kpi.ua/navchannia/praktyka.html">https://eco-paper.kpi.ua/navchannia/praktyka.html</a>

## PRACTICE PROGRAM

### *1 Description of the educational discipline, its purpose, subject of study and learning outcomes*

Master's practice of the educational and professional training program is one of the important practical disciplines of training future specialists. Practice is one of the final stages of master's training in the educational and professional field of training in higher education institutions of Ukraine.

*The purpose* of practical training is to master modern methods, forms of organization and tools of work in the field of their future professional activity, to form on the basis of acquired knowledge, professional skills and to acquire experience in making independent decisions during specific work in real market and production conditions, to educate the need to systematically update their knowledge and creatively apply it in practical activities.

*The subject* of practice is deepening the skills of independent practical work, expanding the scientific worldview of students, final formulation of the topic of the master's thesis, determination of its structure and content of the main sections.

In accordance with the goal, the preparation of masters of OPP requires the strengthening of the following *competencies formed in students* :

- Ability to learn and master of modern knowledge;
- Ability to make informed decisions;
- Ability to generate new ideas (creativity);
- Ability to search, process and analyze information from various sources;
- Ability to motivate people and move towards a common goal;
- Ability to develop and improve methods and technologies;
- Awareness at the level of the latest achievements necessary for research and/or innovative activities in the field of ecology, environmental protection and balanced nature management;
- Ability to use principles, methods and organizational procedures of research and/or innovation activity;
- The ability to apply new approaches to the analysis and forecasting of complex phenomena, critical understanding of problems in professional activity;
- Ability to demonstrate knowledge and own conclusions to specialists and non-specialists;
- The ability to organize works related to the assessment of the ecological state, environmental protection and optimization of nature use, in conditions of incomplete information and conflicting requirements;
- The ability to self-educate and improve skills based on innovative approaches in the field of ecology, environmental protection and balanced nature management;
- The ability to assess the level of negative impact of natural and anthropogenic factors of ecological danger on the environment and people;
- The ability to develop a set of management solutions;
- The ability to collect and process information in order to obtain parameters characterizing the state of the environment.

According to the requirements of the educational and professional program, after learning the "Practice" credit module, students must demonstrate the following *program results* :

- Know and understand fundamental and applied aspects of environmental sciences;
- To be able to use conceptual ecological regularities in professional activity;
- To know the basic concepts of natural science, sustainable development and the methodology of scientific knowledge at the level of the latest achievements;
- Know the legal and ethical norms for evaluating professional activity, developing and implementing socially significant environmental projects in conditions of conflicting requirements;
- Demonstrate the ability to organize collective activities and implement complex environmental protection projects, taking into account available resources and time

constraints;

- Know the latest methods and instrumental means of ecological research, including methods and means of mathematical and geo -informational modeling;
- Be able to communicate in a foreign language in scientific, industrial and social spheres of activity;
- Be able to clearly and unambiguously convey professional knowledge, own justifications and conclusions to specialists and the general public;
- Know the principles of personnel and resource management, based on approaches to decision-making in conditions of incomplete/insufficient information and conflicting requirements;
- Demonstrate awareness of the latest principles and methods of environmental protection;
- Be able to use modern information resources on ecology, nature management and environmental protection;
- Be able to assess landscape and biological diversity and analyze the consequences of anthropogenic influence on natural environments;
- Be able to assess the potential impact of man-made objects and economic activities on the environment;
- Apply new approaches to develop a decision-making strategy in complex, unpredictable conditions;
- Assess environmental risks under conditions of insufficient information and conflicting requirements;
- Choose the optimal management and/or nature management strategy depending on environmental conditions;
- Critically interpret theories, principles, methods and concepts from various subject areas to solve practical problems and problems of ecology;
- Be able to use modern methods of information processing and interpretation when carrying out innovative activities;
- Be able to independently plan the implementation of an innovative task and formulate conclusions based on its results;
- Know modern approaches to the organization of ecologically clean productions, reorganization and reconstruction of existing productions from the standpoint of resource conservation, taking into account the life cycle of the product;
- Analyze the results of environmental control of enterprises, evaluate the engineering and technical level of means of environmental protection against the harmful effects of production;
- Using scientific and technical information, regulatory documents, professional knowledge, apply methods of managing technological processes, equipment, which ensure protection of water bodies, atmosphere, soil and subsoil from pollution and harmful effects.

## ***2 Pre- requisites and post- requisites of the discipline (place in the structural and logical scheme of training according to the relevant educational program)***

In the process of training masters in the specialty 101 Ecology of the educational and professional direction of training, an important place is occupied by practice, which is carried out in the 3rd semester of study for 8 weeks. The specific dates of practice are determined by the relevant educational plans, the schedule of the educational process and the order regarding the organization and practice for the relevant academic year.

High-quality practice is based on the principles of integration of various knowledge acquired by students during the study of disciplines during undergraduate and master's studies. Master's practice OPP 101 Ecology provides a comprehensive preparation for writing a student's master's thesis.

### ***3 Content of practice***

The practice of the masters of OPP gives students the opportunity to familiarize themselves with the methods and techniques of research in the field of environmental protection, including research equipment, water treatment and water purification systems, air basin protection technologies and equipment used for their implementation. During practice, students get acquainted with the means and methods of monitoring environmental objects, modern methods of analysis of water, gas emissions, air, and the effectiveness of environmental protection technologies. In practice, students also get acquainted with technical, patent and regulatory documentation, the main requirements for the impact of enterprises on the environment. During practice, master's students strengthen their own skills in planning and conducting both individual experiments and complex research, improve their own skills in processing research results. A separate important component of practice is working with patent and literary sources, including foreign ones, studying various technical documentation of various enterprises or individual technological processes. During practice and preparation of a master's thesis, students have the opportunity to independently prepare publications in specialized scientific publications, make presentations at conferences, symposia, etc. Features of educational and professional master's training programs at polytechnic higher education institutions of Ukraine and leading technical universities of the world, in most cases, is combining scientific research, technological, and pre-diploma components for the preparation of master's theses and the acquisition of professional competencies. The presence of a research component in the master's thesis is mandatory for masters of the educational and professional training program.

The basic institutions for the internship of students of the specified specialty are research institutions of the National Academy of Sciences of Ukraine, departments of universities, specialized state bodies, and various enterprises.

Meetings with leading teachers of the department or specialists from other organizations can be additionally arranged for students.

#### ***4 Educational materials and resources***

##### ***Basic literature***

1. The regulations on the procedure for the practice of higher education applicants of the National Technical University of Ukraine "Ihor Sikorskyi Kyiv Polytechnic Institute" were approved by the order of the Rector, ORDER No. 7/172 dated 09/24/2020. [Electronic resource]. - Access mode - [https://document.kpi.ua/files/2020\\_7-172.pdf](https://document.kpi.ua/files/2020_7-172.pdf).
2. Methodological recommendations on issues of organization of students' practice and preparation of practical work programs of the National Technical University of Ukraine "Ihor Sikorskyi Kyiv Polytechnic Institute" [Text] / Composer: N.M. Lapenko , I.L. Spivak, I.V. Fedorenko, O.M. Shapovalova ; in general \_ ed. P.M. Yablonsky . - K.: KPI named after Igor Sikorskyi, 2018. – 29 p.
3. Regulations on the organization of the educational process at KPI named after Igor Sikorskyi: approved by order of the Rector, ORDER No. 7-124 dated 07/20/2020. [ electronic resource]. - Access mode - <https://document.kpi.ua/regulations>

##### ***Additional literature***

The list of additional literature is formed by the head of practice for a specific practice base and individual task.

##### ***Information resources on the Internet***

1. Organization of practice at KPI named after Igor Sikorsky - <https://osvita.kpi.ua/node/17>
2. Department of Ecology and Technology of Plant Polymers. Practice - <https://eco-paper.kpi.ua/navchannia/praktyka.html>

## **EDUCATIONAL CONTENT**

### ***5 Methods of mastering an educational discipline (educational component)***

At the beginning of the internship, the student receives a diary with an individual task and a calendar, which clearly indicates the main purpose of the work and the stages of its implementation.

Individual practice tasks necessarily include scientific, scientific-technical, design, technological and other research components necessary to obtain a scientific result that will have both scientific novelty and practical value

At the beginning of the internship, students must undergo safety and fire safety training.

The management of practice from the university is carried out by the teacher of the department, who is responsible for passing the practice. The head of practice from the department ensures the implementation of all organizational measures before the start of practice: briefing on the procedure for passing practice; provision of necessary documents to intern students: referral to practice, practice diary.

### **The head of practice from the department must:**

- develop practice work programs and coordinate them with practice databases no later than two weeks before the start of practice;
- warn students about issuing of medical certificate about their health (if necessary) 7 days before the start of practice;
- no later than 7 days before the start of the internship, provide the internship bases with lists of student interns for issuing temporary passes;
- prepare to provide a student or a group of students with referrals for practice;
- when two or more students are sent for practice, appoint the senior group, who is the assistant to the practice manager;
- to hold meetings with students and familiarize them with work programs of practice;
- issue diaries with individual tasks and a calendar plan for practice to students;
- to ensure the timely arrival of students at practice bases and monitor the completion of practice;
- systematically, at least once a week, advise students and control the stages of individual task execution according to the calendar plan;
- to take part in accepted credits from practice;
- submit to the dean's office a report on the results of practice with suggestions for its improvement.

The administration of the enterprise or institute assigns to each student (or several students) a practice supervisor from among the specialists of the enterprise or institute, who conduct or manage the work or the conduct of certain researches and during the period of the students' practice involve them in the performance of a certain type of work or research. Performing a certain amount of work, students learn to work on technological equipment, control and measuring equipment, with scientific and technical literature, patent materials and regulatory documents, conduct experiments, monitor their effectiveness, discuss results and draw conclusions.

During practice, students must constantly visit the enterprise or institute (practice base), keep a diary and note down the technical characteristics of the equipment, its technological capabilities, methods of conducting experiments, and their results. This information will be needed when compiling a practice report and can be used when writing a master's thesis.

### **During practice, students are obliged to:**

- before the beginning of practice, receive from the head of practice at the department referrals for practice, work program of practice and practice diary;
- arrive at the practice base on time;
- to fully perform all the tasks provided for by the work program of the practice and the instructions of its managers;
- to know and strictly follow the rules of labor protection, safety and industrial sanitation and internal regulations of the practice base;
- to be responsible for the work done;
- to draw up a report in a timely manner and make a credit from practice.

### ***6 Student's independent work***

The student's independent work during the internship takes 100% of the time allocated for the internship. The main task of independent work is the acquisition of scientific knowledge in certain areas, the implementation of individual practice tasks and the preparation of material for writing a master's thesis. The student records all stages of the individual assignment in the diary and reflects it in the final practice report. The main document, according to which the internship is monitored, is the internship diary issued by the department. The diary contains an individual task, a practice calendar, and weekly entries. Practice managers from the department and the practice base check the diary every week. The manager monitors the performance of an individual task. After the end of the practice period, the head of the practice base provides feedback on the student's practice in the diary and evaluates its results with a grade, the head of the department writes a feedback on the general results of the practice.

During practice, each student performs an individual task. By completing an individual task, students expand and deepen the knowledge gained during their studies at the university, gain experience in independent research work.

Based on the results of the research and theoretical work, the student must make a report at a scientific seminar or specialized conference and prepare an article for publication in a scientific publication or apply for a Ukrainian patent for an invention or utility model.

The total duration of practice is 8 weeks. Approximate distribution of practice duration:

No	Content	Deadline, days
1.	Arrival of students for practice, registration and receipt of passes	1-3
2.	Training on safety and occupational health and safety	1-2
3.	Conducting tours of the enterprise, institution	During the entire period of practice
4.	Implementation of the practice program and individual task	During the entire period of practice
5.	Keeping a practice diary	During the entire period of practice
6.	Completion of the report	The last week of practice
7.	Providing a report and practice diary for review	The last week of practice
8.	Dropout of students from practice	1
9.	Compilation of a practice test	1 (within a week after the end of practice)

## ***7 Policy of academic discipline (educational component)***

### ***Rules for attending practice and behavior during practice***

Students obliged to take active participation in education process , do not be late for practice and do not miss it without a good reason, do not be distracted by actions that are not related to educational process.

Process passing practice constantly is controlled head of the practice. Once a week head checks stages implementation individual task student and practice schedule .

The last ones practice days are set aside for processing and design everyone practice results. Student completes practice diary , prepares practice report .

The report should have from 30 to 50 pages (A4 format) of printed text. The report is written on the basis of the collected materials in accordance with the practice plan and the individual task and consists of the following main parts:

- Title page of the report
- Abstracts
- Contents of the practice report
- Introduction
- Literary review
- Experimental part (description of conducted studies, their results)
- Conclusions
- References
- Attachments

### ***Appointment rules incentives and penalties points***

Penalties and incentives points are not provided as part of practice.

### ***Policy of deadlines and rescheduling***

Not later than a week after the end of the internship, the student passes the assessment on the internship to the commission, which consists of the supervisor of the internship, leaders of other students and teachers of the department. Composition of the commission forms the head of the department. For admission to delivery credit the student has fill out and sign with the supervisor practice diary, prepare practice report. The grade from practice is taken into account equal to others estimates which characterize progress students. The results drafting Credits from practice are entered in the exam information is inserted in the balance sheet books and magazines accounting success.

In case occurrence debts or any force majeure circumstances, students have contact the teacher on the available (provided by the teacher) communication channels for solving problematic questions and coordination of the algorithm of actions for practice.

### ***Policy academic integrity***

Plagiarism and others forms of unscrupulous work are inadmissible. Plagiarism are to absence links at using printed and electronic materials, quotes, opinions of others authors. Inadmissible hints and write-offs while writing tests, conducting classes;



surrender credit for another student; copying materials protected by the copyright system , without the permission of the author of the work .

Policy and principles academic integrity defined in section 3 of the Code of Honor National Technical University of Ukraine "Ihor Sikorskyi Kyiv Polytechnic Institute". More details: <https://kpi.ua/code>

### ***Policy academic behavior and ethics***

Students must be tolerant , respect the opinion of others , objections formulate in the correct form , constructively support reverse communication in classes .

Norms of ethical behavior of students and employees defined in section 2 of the Code of Honor of National Technical University of Ukraine "Ihor Sikorskyi Kyiv Polytechnic Institute". More details: <https://kpi.ua/code>

### ***8 Types of control and rating system for evaluating learning outcomes (RSO)***

Distribution of study time by types of classes and tasks in the discipline according to the working study plan:

Semester	Training time		Distribution of study hours				Control measures		
	Credits	Acad. hours	Lectures	Practical	Lab. do	IWS	MCT	RR	Semester control
3	14	420	-	-	-	420	-	-	test

Semester control is credit.

The student's rating for practice consists of the points he receives during the practice test (protection of the practice report).

The report is defended by the student at the committee. The committee consists of practice supervisors from the department, supervisors of master's theses. The commission accepts credit during the first 7 days after the end of practice.

In order to be admitted to the practice credit, the student must submit to the committee (no later than three days before the end of the practice) a practice report and practice diary for verification and review.

The grade from the practice is taken into account along with other grades that characterize the success of the students. The results of passing practical tests are entered in the examination information, put in the test book and in the journal of success. A student who did not complete the internship program, or received negative feedback from the internship supervisor or failed to pass the test, is sent to internship a second time during the vacation period, or is expelled from the university.

#### **Evaluation criteria:**

- 1) Availability of completed documents: practice report; practice diary - 60 points.
- 2) Protection of the practice report and implementation of the individual practice task
  - complete completion of an individual task - 40 points;
  - incomplete completion of an individual task – 10-20 points;
  - sufficient correspondence of the content of the individual task - 0 - 5 points.

To obtain a passing grade, the sum of all received rating points is translated according to the table:

<b>Scores</b>	<b>Rating</b>
9 5 ...100	perfectly
8 5 ... 9 4	very good
75...8 4	fine
6 5 ...74	satisfactorily
60...6 4	enough
RD <60	unsatisfactorily
Admission conditions not met	not allowed

**The working program of the academic discipline (syllabus):**

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**Approved** by the Department of E and PPT (protocol No. 12 from 12.04.22)

**Agreed** by the FCE Methodical Commission (protocol No. 10 from 06.24.22)