



Національний технічний університет України
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
ІМЕНІ ІГОРЯ СІКОРСЬКОГО»



Ecology and technology of
plant polymers

PRE-DIPLOMA PRACTICE

Working program of the academic discipline (Syllabus)

Details of the academic discipline

Level of higher education	First (undergraduate)
Branch of knowledge	<i>16 Chemical and bioengineering</i>
Specialty	161 Chemical technologies and engineering
Educational program	<i>Industrial ecology and resource-efficient clean technologies</i>
Discipline status	<i>Normative</i>
Form of education	<i>full-time (full-time), part-time (full-time)</i>
Year of training, semester	<i>4th year of study, 8th semester</i>
Scope of the discipline	<i>2 credits (600 hours)</i>
Semester control/ control measures	<i>Test</i>
Lessons schedule	<i>2 weeks, according to the University Order</i>
Language of teaching	<i>Ukrainian</i>
Information about the course leader / teachers	Responsible for practice at the department: Ploskonos Viktor Hryhorovych Contacts: vploskonos@gmail.com , tel. 097 674 9433
Placement of the course	https://do.ipk.kpi.ua/course/view.php?id=4395

Program of educational discipline

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

The subject of the academic discipline. Pre-diploma practice of bachelors is the final link of practical training of students. It allows you to deepen and consolidate theoretical knowledge from all disciplines of the educational process and to select actual material for the implementation of a bachelor's project, namely: from specialty 161 - Chemical technologies and engineering, of the educational program "Industrial ecology and resource-efficient clean technologies".

Pre-diploma practice is aimed at systematization, expansion and consolidation of professional knowledge, formation of students' initial competencies for conducting independent design and construction work. The main content of the pre-diploma practice consists in involving students in independent analytical and design work, familiarization with technological processes at various enterprises, issues of implementation of theoretical and practical developments in the field of chemical technology and engineering.

The purpose of the educational discipline.

the purpose of practical training is the mastery of modern methods, forms of organization and tools of work in the field of their future professional activity by students of higher education, formation on the basis of acquired knowledge, professional skills and the acquisition of experience in making independent decisions during specific work in real market and production conditions, education of the need systematically to update their knowledge and creatively apply it in practical activities [1]. 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 diploma project, determination of its structure and content of the main sections.

tasks practice is a thorough familiarization with the main technological processes and organization of cardboard and paper production; study of the work of the technological flow of production of products in accordance with the individual task; familiarization with the operation of the main equipment used in the technological flow; study of normative and technical documentation, issues of standardization, the latest achievements of science and technology and the order of their implementation in production; familiarization with the work of the central laboratory, the technical control department, repair and mechanical workshops, energy and warehouse management, as well as with water supply, ventilation, heating, sewage, and the operation of intra-plant transport; study of the rules of safety technology, fire prevention, as well as labor protection and industrial sanitation measures in force at the enterprise; collection of materials on the topic of the diploma project; drawing up a report on the completion of pre-diploma practice.

1.1 According to the requirements of the educational and professional program, after mastering the credit module "Pre-Diploma Practice", students should develop the following competencies:

- Knowledge and understanding of the subject area and understanding of professional activity;*
- Ability to communicate in the state language both orally and in writing;*
- Efforts to preserve the environment;*
- Ability to use the provisions and methods of fundamental sciences to solve professional problems;*
- Ability to use methods of observation, description, identification, classification of objects of chemical technology and industrial products;*
- Ability to design chemical processes taking into account technical, legislative and environmental restrictions;*
- Ability to use modern materials, technologies and apparatus designs in chemical engineering;*
- Ability to choose and use appropriate equipment, tools and methods for control and management of technological processes of chemical production;*
- Ability to use computing and information technologies to solve complex problems and practical problems in the field of chemical engineering;*
- Ability to apply modern experimental methods of working with technological objects in industrial and laboratory conditions;*
- Ability to determine directions of use of plant raw materials and fibrous semi-finished products, to design and implement technologies for their processing;*
- The ability to distinguish the technological processes of production, to determine the sources and ways of entering the natural environment of harmful components, to assess their impact on the state of human health and the quality of the environment;*
- Ability to design and implement technologies for purification and processing of source gases, wastewater and solid waste.*

1.2. According to the requirements of the program, students practice after learning it must demonstrate the following program learning outcomes:

- Develop and implement projects related to technologies and equipment of chemical industries, taking into account goals, resources, existing limitations, social and economic aspects and risks;*

- Choose and use appropriate equipment, tools and methods for solving complex problems of chemical engineering, control and management of technological processes of chemical production;
- Use modern computing equipment, specialized software and information technologies to solve complex problems and practical problems in the field of chemical engineering, in particular, for calculations of equipment and processes of chemical production;
- Ensure the safety of personnel and the environment during professional activity in the field of chemical engineering;
- Develop project documentation, taking into account the requirements of the standards;
- To substantiate the choice of technological schemes of production on the basis of rational use of raw materials, energy, obtaining high-quality products, achieving high productivity while simultaneously solving environmental issues, calculating material and heat balances of processes, based on them to find the costs of raw materials and energy resources;
- Determine the quality characteristics of plant raw materials, semi-finished products and finished products, choose functional chemical auxiliary substances;
- Participate in the development and implementation of projects aimed at optimal management and handling of industrial waste;
- To assess the state of the environment, to determine the level of impact of the enterprise (production) on the environment, to determine the main polluters of the environment of this enterprise (production);
- Understand basic environmental laws, rules and principles of environmental protection and nature management.

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

The discipline "Pre-diploma practice" is planned for the fall semester in the 4th year for bachelors from the specialty 161 - Chemical technologies and engineering, of the Industrial ecology and resource-efficient clean technologies educational program. The discipline "Pre-diploma practice" is based on the principles of integration of various knowledge acquired by students during the 4-year bachelor's degree while studying engineering and technical disciplines. Discipline "Industrial practice" is the basis that should provide resolution of technical problems and aimed at deep rethinking of existing and creation of new holistic knowledge and professional practice.

2. Content of practice

Pre-diploma practice consists of the following stages (the stages and their sequence may be changed depending on the conditions of the individual task):

- receiving an individual assignment and practice schedule, familiarization with practice program;
- passing instruction on pre-diploma practice, instruction on safety techniques (in the case of face-to-face practice);
- theoretical study of technological processes, productions, specific enterprises (in

depending on the individual task);

- a description of the main processes implemented in the defined technological scheme (production process, etc.);

- detailed analysis and study of the main influencing factors on the processes of mass preparation, casting and production of products at the production or enterprise;

- study of the main factors of pollution of industrial waters, generation of solid industrial (household) waste;

- characteristics of the negative effects on the environment and human health of the compounds formed in the specified technological process (at a separate enterprise, etc.);

- search and analysis of modern technologies that can improve (improve certain indicators) a separate technological process (technology, production, etc.);

- drawing up conclusions regarding the possibility (feasibility) of modernization of the enterprise (individual technological scheme, process, etc.);

- design of a practice diary;

- drawing up a practice report;

- protection of practice results.

Before completing the internship, students must undergo training on the internship, safety techniques and fire prevention (in the case of full-time internship format). Before practice, students receive an individual task from the practice supervisors of the department, by completing which, students get to know and study in detail the specified process or operation of equipment (technological scheme or work of a separate enterprise), methods of product quality control, measures for the rational use of natural resources and environmental protection, etc. By completing an individual task, students expand their engineering and technical outlook, gain experience and specialist qualifications. Also, students get acquainted with the technological scheme of waste processing and sewage treatment at sewage treatment plants, with the equipment involved in the scheme,

During the pre-diploma practice, students collect the necessary material for the completion of an individual assignment and diploma project (preparing for other forms of graduation certification).

Practice schedule:

The total duration of practice is 3 weeks.

Approximate distribution of practice duration:

No	Content	Deadline	Performance Note
1	<i>Submit an application of the established sample at the name of the head of the department with the previous one by the title of the DP topic and a request to appoint a practice manager.</i>		
2	<i>Complete the formalization of the DP task statement: the object, subject and purpose of the practice, the final result of the DP performance.</i>		
3	<i>Form a matrix of entities of the unified model of the "Pre-diploma practice" system of the diploma project (DP).</i>		
4	<i>Prepare a DP template - the first version of</i>		

	<i>the DP.</i>		
5	<i>To approve the final topic, the formalization of the problem statement and the task of the DP.</i>		
6	<i>Create and protect the first version of the DP template with all sections completed.</i>		
7	<i>Prepare a draft abstract of a report at a scientific conference (or an article for Publication in a professional publication of Ukraine).</i>		
8	<i>Submit to the organizing committee conference/editing of a scientific professional edition of a report/article thesis, for example, for the "Resource-energy-saving technologies and equipment" conference, with all accompanying documents.</i>		
9	<i>Formalize the practical value and conclusions regarding the results of the practice on the topic of SE;</i>		
10	<i>Prepare a presentation of the results of the practice for credit from the practice.</i>		
11	<i>Submit the final application on the topic of DP, practice diary, practice report, presentation of the practice report to the committee for the acceptance of practice results.</i>		
12	<i>Protect the results of practice.</i>		
13	<i>Familiarize yourself with the procedure for the preliminary protection of private enterprises.</i>		

4. Educational materials and resources

1. Regulations on the organization of the educational process at Igor Sikorskyi KPI: approved by the order of the Rector, ORDER No. 7-124 dated 07/20/2020. [electronic resource] . - Access mode - <https://document.kpi.ua/regulations>. - Title from the screen. - Ukrainian language.

2. 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. - Title from the screen. - Ukrainian language.

3. 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.

Educational content

5. Methodology for mastering practice (educational component)

ORGANIZATION, CONDUCT AND MANAGEMENT OF PRACTICE

Pre-diploma practice can take place at an enterprise, organization or educational institution. On the part of the university, practice management is carried out by the teacher of the department, who is responsible for the practice, the head of the graduation qualification work, on the part of the company - by a manager from among specialists according to the specialty profile.

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 supervisor of the final qualification work provides consultations on issues related to the writing of the diploma project.

The pre-diploma internship begins with mandatory instruction for all students on safety techniques at the enterprise and workplaces, familiarization with the rules of the internal procedure.

Regulations on the practice of higher education applicants of KPI named after Igor Sikorskyi (Order No. 7-172 dated September 24, 2020 regulates the duties of the head of practice and the student.

The head of practice from the department must [1-3]:

- develop work programs of practice and coordinate them with practice databases no later than two weeks before the start of practice;
- warn students about issuing a 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 a referral for practice;
- when two or more students are sent for practice, appoint the senior group, who is the assistant to the practice manager;
- hold meetings with students and acquaint them with work practice programs;
- issue diaries to students with individual tasks and a calendar plan for practice;
- ensure the timely arrival of students at practice bases and monitor the completion of practice;
- systematically, at least once a week, advise students and monitor the stages of individual task performance according to the calendar plan;
- to help the head of practice from the enterprise in compiling the characteristics of each student;
- to take part in accepted credits from practice;
- check the return of passes, literature and property to the enterprise by all students;
- issue a log of going to work, as well as conduct an instruction on safety techniques, if students are doing internships in the structural divisions of the university;
- submit to the dean's office a report on the results of practice with suggestions for its improvement.

Students of the university during internship are obliged [1-3]:

- 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 internship work program and the instructions of its supervisors;
- to know and strictly adhere to the rules of labor protection, safety and pre-diploma sanitation and internal regulations of the enterprise;
- to be responsible for the work done;
- to issue a report in a timely manner and make a credit from practice.

Practice diary

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 and write down their comments. The supervisor of the diploma project supervises the implementation of the 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 diploma project writes feedback on the status of the diploma project in the diary.

6. Independent work of the student

During the internship, the student must complete the following amount of work:

1. Definition of the object and subject of practice taking into account the practice base (enterprise/institution).
2. Together with the head of the SE, form the content of the individual task.

3. Determination of the terms and scope of the required research and calculations.
4. Collection and systematization of information about the object of practice.
5. Description of the practice object model.
6. Clarification of the topic of DP. Formulation of the statement of the problem for writing the DP.
8. Analysis and selection of methods and technologies for the implementation of the given task.
9. Forming a practice report.

Policy and control

7. Policy of academic discipline (educational component)

Practice report requirements

At the end of the internship, students must submit a written report together with a diary to the supervisor of the internship from the department within the set deadline (no later than three days after the end of the internship) for inspection, review and admission to the defense. The written review of the head of practice from the department and the scientific head of the DP are entered in the student's diary.

The internship report must contain information about the student's implementation of the internship program and individual assignment. Systematization of the collected materials is carried out by the student during practice and is completed during the time specially allocated for this purpose, in accordance with the practice program.

The structure and content of the practice report sections

The practice report consists of the following sections or documents:

1. Title page of the report (according to the sample).
2. Contents of the practice report.
3. Introduction, with a brief overview of the problem area for which the DP is being implemented, a brief summary of the sections of the report.
4. Formalization of the statement of the DP task (object, subject and goal of practice, final result of DP performance).

5. The first full version of the DP with all sections completed. DP consists of the following elements:

- Title page of the established sample;
- Tasks for the diploma project of the established model;
- Abstract (in Ukrainian);
- Abstract (abstract in English);
- Content;
- List of conventional designations, abbreviations and terms;
- Introduction;
- The main part with a list of sections;
- Conclusions;
- References.

6. Conclusions to the report.

Summary of practice

The report is defended by the student at the commission [3] appointed by the head of the department. The commission consists of practice managers from the department, heads of state enterprises. The commission accepts credit during the first ten days after the end of practice.

In order to be admitted to the practice credit, the student must present the commissions (no later than three days before the end of the practice) for verification and review:

- 1) practice report;
- 2) presentation of the practice report;
- 3) practice diary.

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

Current control: checking the practice diary every week

Calendar control: checking the performance of four classes of tasks according to the calendar plan.

Semester control: defense of the practice report, credit.

Terms of admission to semester control: a minimum positive assessment for the performance of an individual task, a minimum rating of 60 points.

Evaluation criteria:

1) Availability of documents: practice report; presentations of practice reports; practice diary - 60 points.

2) Protection of the practice report and performance of the individual practice task

Evaluation criteria:

1) complete completion of an individual task - 40 points;

2) incomplete completion of an individual task – 10-20 points;

3) sufficient correspondence of the content of the individual task – 0 - 5 points.

Table of correspondence of rating points to grades on the university scale:

R	University scale
95...100 points	Perfectly
85...94 points	Very good
75...84 points	Fine
65...74 points	Satisfactorily
60...64 points	Enough
R<60 points	Unsatisfactorily
Admission conditions not met	Not allowed

Working program of the academic discipline (syllabus):

Compiled associate professor, Ph.D., Ploskonos V.G.

Approved department ___E and TRP___ (protocol No. 17 dated 23.05.2024)

Agreed by the IHF Methodical Commission (protocol No. 11 dated 06/28/2024)