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

Ecology and technology of plant polymers

INTERNSHIP

Working program of the academic discipline (Syllabus)

Details of the academic discipline	
Level of higher education	***First (undergraduate)***
Branch of knowledge	*16 Chemical and bioengineering*
Specialty	***161 Chemical technologies and engineering***
Educational program	*Industrial ecology and resource-efficient clean technologies*
Discipline status	*Normative*
Form of education	*full-time (full-time), part-time (full-time)*
Year of training, semester	*4th year of study, 8th semester*
Scope of the discipline	*4 credits (120 hours)*
Semester control/ control measures	*Test*
Lessons schedule	*3 weeks, according to the University Order*
Language of teaching	*Ukrainian*
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.ipo.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. Industrial practice is one of the important practical disciplines of higher education specialist training, namely: bachelor's degree in specialty 161 - Chemical technologies and engineering, industrial ecology and resource-efficient clean technologies educational program.

The purpose of the educational discipline.

The purpose of industrial practice is to master higher education graduates, namely bachelors, modern methods, forms of organization and work tools in the field of their future professional activity, formation on the basis of acquired knowledge, professional skills and gaining experience in making independent decisions during specific work in real market and production conditions, fostering the need to systematically update one's knowledge and creatively apply it in practical activities [1]. The subject of industrial practice is deepening the skills of independent practical work, expanding the scientific worldview of students.

The task of production practice is to thoroughly familiarize yourself 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, the latest achievements of science and technology and the order of their implementation in production, as well as with water supply of the technological process, study of the rules of safety technology, fire

prevention, as well as labor protection and industrial sanitation measures in force at the enterprise; drawing up a report on the completion of production practice.

1.1 According to the requirements of the educational and professional program, after mastering the credit module "Industrial practice", students should develop the following competencies:

- Ability to apply knowledge in practical situations;

- 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 of the academic discipline, students after mastering itmust demonstrate the following program learning outcomes:

- To know and understand the mechanisms and kinetics of chemical processes, to use them effectively in the design and improvement of technological processes and apparatus of the chemical industry;

- 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.

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

3. **Content of the academic discipline**

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

- receiving an individual assignment and practice schedule, familiarization with practice program;

- training in production practice, training in 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;

- 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,

Practice schedule:

The total duration of practice is 3 weeks.

Approximate distribution of practice duration:

No	*Content*	*Deadline*	*Performance Note*
1	*Submit an application of the established sample at the name of the head of the department and a request to appoint a practice manager.*		
2	*Complete the formalization of the statement of the practice task: the object, subject and purpose of the practice.*		
3	*Form a matrix of entities of the unified model of the "Production practice" system*		
4	*Formalize the practical value and conclusions regarding the results of the practice.*		
5	*Prepare a presentation of the results of the practice for credit from the practice.*		
6	*Submit a practice diary, a practice report, and a presentation of the practice report to the practice results acceptance commission.*		
7	*Protect the results of practice.*		

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. Methods of mastering an educational discipline (educational component)

ORGANIZATION, CONDUCT AND MANAGEMENT OF PRACTICE

Industrial 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 supervisor 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.

Industrial practice begins with mandatory safety instruction for all students 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 follow the rules of occupational health and safety, safety and industrial 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 practice, form the content of the individual task.

3. Collection and systematization of information about the object of practice.

4. Analysis and selection of methods and technologies for the implementation of the task.

5. 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 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, a brief summary of the sections of the report.

4- Title page of the established sample;

- 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. 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 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 by associate professor, Ph.D., Ploskonos V.G.

Adopted by the department ___E and TRP___ (protocol No. 17 dated 23.05.2024)

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