



**Machines and devices
chemical and oil refining
industries**

Pre-graduate internship

Syllabus of the academic discipline (Syllabus)

1. Academic discipline requirements

Level of higher education	<i>third (educational and scientific)</i>
Discipline	<i>13 Mechanical Engineering</i>
Specialty	<i>133 Industrial mechanical engineering</i>
Educational program	<i>Industrial mechanical engineering</i>
Discipline status	<i>Required</i>
Form of study	<i>full-time (day)</i>
Year of training, semester	<i>2nd year, fall semester</i>
Scope of the discipline	<i>3 credits</i>
Semester control/control measures	<i>Test</i>
Class schedule	<i>http://rozklad.kpi.ua/Schedules/ScheduleGroupSelection.aspx</i>
Language of instruction	<i>Ukrainian</i>
Information about the course leader/teachers	<i>Supervisors of Doctor of Philosophy theses</i>
Course placement	<i>https://ci.kpi.ua/uk/syllabuses-bac-disciplines/#place</i>

Introduction

Pedagogical practice of postgraduate students is a mandatory component of educational and scientific programs for training Doctors of Philosophy at Igor Sikorsky Kyiv Polytechnic Institute.

Pedagogical practice of postgraduate students is a multifaceted, organic process of professional, psychological, pedagogical and methodological training of future teachers of higher education, which allows synthesizing theoretical knowledge and practical pedagogical experience, theoretical professional training of a postgraduate student and future teaching activities. Pedagogical practice creates opportunities for the formation of the readiness of future scientific and pedagogical workers to conduct educational work with students, the need to acquire and apply new theoretical and methodological knowledge with simultaneous assimilation of pedagogical experience.

During pedagogical practice, postgraduate students consolidate and deepen pedagogical knowledge, skills, develop creative abilities, pedagogical thinking. The development of a communicative culture of future higher education lectures, the formation of skills of pedagogical interaction and cooperation with students is of great importance.

During their teaching practice, postgraduate students become familiar with the organizational structure of the university, the features of its functioning, which are reflected in educational principles, factors, forms of organizing the educational process, goals, means of activity, cultural traditions, values, etc.

2. The purpose and objectives of the practice

The purpose of pedagogical The practice is aimed at acquiring skills and abilities for educational and methodological work in modern conditions by postgraduate students, deepening and consolidating knowledge on the organization and forms of implementation of the educational process, as well as its scientific and research, educational and methodological, regulatory and organizational support, forming skills and abilities to process scientific and information sources when preparing classes, and applying active methods of teaching disciplines in the relevant specialty.

The object of practice is an educational process of training specialists in a relevant specialty.

The subject of practice is a separate professional discipline of the curriculum (a basic discipline that corresponds to the direction of the postgraduate student's scientific research).

The goal of pedagogical practice is to develop the following competencies in PhD candidates:

- the ability to carry out and organize scientific and pedagogical activities in higher education using the latest pedagogical approaches and practices, including information technologies in the educational process, to diversify teaching methods for the purpose of better perception of the material.
- the ability to ensure continuous self-development and self-improvement, responsibility for the development of others in the professional field, adhering to pedagogical ethics, rules of academic integrity in scientific and pedagogical activities.

After completing the internship, applicants must demonstrate the following learning outcomes:

- to possess modern methods of pedagogical activity in higher education, to be able to teach professionally oriented disciplines of the specialty based on systemic, methodological knowledge of the specialty and the results of scientific research using basic knowledge of pedagogy and psychology of higher education.
- know the basics of planning the educational process in a higher education institution, the tasks and functions of a scientific and pedagogical worker, the requirements for preparing documentary support for the educational process, have skills in organizing pedagogical activities, planning educational sessions.
- develop content, structure educational material, choose methods and means of teaching and control, monitor and evaluate learning outcomes and correct the educational process during teaching, know the psychological and didactic foundations of the learning process, the taxonomy of the goals of the educational session, and methods for activating students' cognitive activity.

Pedagogical practice is carried out at the departments of Igor Sikorsky Kyiv Polytechnic Institute.

3. Organization of internship

Responsibility for organizing the internship and monitoring its implementation lies with the university management.

The general organization of the practice and control over its implementation is carried out by the head of the department and the person responsible for conducting the practice at the department to which the postgraduate student is assigned for the period of training in the postgraduate program. The direct management of the postgraduate student's pedagogical practice is carried out by the postgraduate student's scientific supervisor.

The period of pedagogical practice is determined by the schedule of the educational process and curricula, and the content of the practice of each individual postgraduate student is determined by the supervisor in the individual postgraduate plan, which is approved at a meeting of the department at least five days before the start of the semester (classes) in which the pedagogical practice takes place.

Person responsible for conducting the internship:

- conducts methodological seminars with postgraduate students and their supervisors;
- ensures the implementation of all organizational measures before the start of the internship;

- monitors the implementation of the internship program by postgraduate students;
- provides instructions to postgraduate students on the procedure for completing the internship;

Practice Manager:

- provides postgraduate students with the necessary educational and methodological materials (programs, calendar, methodological recommendations for organizing and conducting pedagogical practice, etc.);
- informs postgraduate students about the reporting system (execution of the report, practice diary, scientific, methodological and analytical materials, report on the results of the practice, compliance by postgraduate students with the university's internal regulations, etc.);
- participates in the work of the commission for accepting credits for practice, which is headed by the head of the department.

Responsibilities of a postgraduate intern:

- before starting the internship, familiarize yourself with the procedure for completing the necessary documents;
- arrive at practice on time;
- conduct their activities in accordance with the requirements of the University Charter, adhere to the Code of Honor, internal regulations, and perform the tasks of managers provided for in the pedagogical practice program;
- systematically maintain proper documentation of teaching practice and present it to the practice manager upon request;
- Upon completion of the internship, the postgraduate student must complete the preparation of reporting materials (internship report, pedagogical diary, feedback from the internship supervisor, etc.) no later than three days after the end of the internship.

A postgraduate intern has the right to:

- make proposals for improving the educational process of the university, organizing pedagogical practice, and participating in conferences and meetings of the department;
- receive advice from teachers and managers on all issues related to teaching practice;
- use the university library, classrooms, study guides, textbooks, etc.

4. Content of the academic discipline

Organizational stage

At the first stage, students are introduced to: the organizational structure and system of organizing the activities of the university and the department where postgraduate students will undergo pedagogical practice; the University Charter, regulatory documents that regulate the organization of the educational process at the university; methods of organizing learning, innovative educational technologies, the system of assessing student learning outcomes, etc.

Before the start of the internship, postgraduate students receive consultations on the preparation of all necessary documents; instruction on the internship procedure and safety precautions, necessary documents (diary, individual assignment, etc.). The internship supervisor also informs postgraduate students about the internship reporting system.

Pedagogical stage

This is the main stage of practice, which includes: planning by the postgraduate student of his own teaching activities, studying the work program (syllabus) for the chosen discipline, test, control tasks and questions for each topic of the lesson; preparation for classes, drawing up plans-summaries of classroom classes and their methodological and didactic support, etc.; conducting various types of classes according to the schedule in a fixed academic group according to the established schedule.

Practice leaders from the department must be present at classes conducted by postgraduate students. After each class conducted by a postgraduate student, a psychological and pedagogical analysis of the classes attended must be conducted, as well as a detailed discussion in order to identify the advantages and disadvantages of the class conducted.

Final stage

At the third, final stage of the internship, the results of the internship are discussed with the internship supervisor. Graduate students prepare a report on the results of the internship and defend it during the exam.

5. Summing up the practice

Based on the results of the internship, the postgraduate student completes a Report on its completion.

The structure of the report on the completion of teaching practice is determined by the work program of the practice.

The report on the completion of the pedagogical practice must contain information on the implementation of all sections of the practice program in accordance with the individual plan of the postgraduate student. The report must be signed and evaluated by the practice supervisor. The report must provide a quantitative and qualitative analysis of the work performed, participation in the work of the department.

Graduate students defend their internship report in a commission, the composition of which is determined by the head of the department.

The commission accepts the test scores from postgraduate students no later than three days after the end of the teaching practice. When evaluating the work of a postgraduate student during the practice, his readiness to conduct educational classes is taken into account.

The assessment is determined taking into account the timeliness of submission of the necessary documents from the internship, the quality of the prepared report, the completion of individual tasks, the feedback from the internship supervisor, the level of knowledge, the results of a survey among students in the group in which classes were held during the internship, and the level of defense by the graduate student of the internship report.

In order to objectively assess the knowledge and skills acquired during the internship, the defense of internship reports is carried out taking into account the tasks completed by the graduate students and the corresponding number of points for each type of work.

The results of pedagogical practice are discussed at a department meeting.

6. Educational materials and resources

6.1 Basic

1. Requirements for completing a report on pedagogical practice: a textbook [Electronic resource]: a textbook for applicants for the level of higher education Doctor of Philosophy (PhD) who study in the educational and scientific program Industrial Mechanical Engineering / Igor Sikorsky Kyiv Polytechnic Institute; compilers: Stepaniuk A.R., Kazak I.O. – Electronic text data (1 file: 0.25 MB). – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2025. – 48 p.
2. Law of Ukraine “On Higher Education” dated 01.07.2014 No. 1556-VII [Electronic resource]. – Access mode:<http://zakon4.rada.gov.ua/laws/show/1556-18>.
3. Regulations on the organization of the educational process at Igor Sikorsky Kyiv Polytechnic Institute. – Access mode:<http://osvita.kpi.ua/node/39>
4. Methodological recommendations on the organization of student practice and drawing up work programs for practice at the National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” [Text] / Compiled by: N. M. Lapenko, I. L. Spivak, I. V. Fedorenko, O. M. Shapovalova; edited by P. M. Yablonsky. – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2018. – 29 p.
5. Artemova L. V. Pedagogy and methods of higher education: teaching and methodical manual / L. V. Artemova. – Kyiv: Condor, 2012. – 272 p.
6. Golovenkin V. P. Pedagogy of higher education [Electronic resource]: textbook / V. P. Golovenkin; Igor Sikorsky Kyiv Polytechnic Institute. – 2nd ed., revised and supplemented. – Electronic text data (1 file: 3.6 MB). – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2019. – 290 p. Access mode:<https://ela.kpi.ua/handle/123456789/29032>
7. Pedagogical acmeology: A complex of educational and methodological support for postgraduate students of all specialties, full-time (day/evening) form of study / Compiled by: Lozhkin G. V., Volanyuk N.

Yu. – Kyiv: Igor Sikorsky Kyiv Polytechnic Institute, 2016. – 47 p.

8. Kuzminsky A. I. *Pedagogy of higher education: a teaching manual* / A. I. Kuzminsky. – 2nd ed. – Kyiv: Znannya, 2011. – 486 p.

9. Nachayev V. M. *Teaching methods in higher education: teaching manual* / V. M. Nachayev. – Kyiv: Center for Educational Literature, 2007. – 232 p.

6.2 Supporting literature:

10. Artemova L. V. *History of Pedagogy of Ukraine: Textbook* / L. V. Artemova. – Kyiv: Lybid, 2006. – 424 p.

11. Zyazyun I. A. *The beauty of pedagogical action: a teaching aid* / Zyazyun I. A., Sagach G. M. – Kyiv: Ukrainian-Finnish Institute of Management and Business, 1997. – 302 p.

12. Halperina V. *Some issues of research of state educational policy* / V. Halperina // *Higher Education of Ukraine*. – No. 4. – 2002. – P. 70–76.

13. Golovko L. *Activation of independent student work during lecture classes* / L. Golovko // *Education and Management*. – Vol. 5. – No. 3. – 2002. – P. 147–151.

14. Carnegie D. *How to develop self-confidence and influence people by speaking publicly* / D. Carnegie. – Kyiv: Globus, 1995. – 184 p.

15. Kuzminsky A. I. *Pedagogy: tasks and situations: practical work* / A. I. Kuzminsky, L. P. Vovk, V. L. Omelyanenko. – Kyiv: Znannya-Press, 2003. – 429 p.

16. Moroz O. G. *First steps to mastery* / O. G. Moroz, V. L. Omelyanenko / Editor-in-chief V. Y. Verba. – Kyiv: Znannia Ukrainy, 1992. – 112 p.

17. Moiseyuk N. E. *Pedagogy: a teaching manual* / N. E. Moiseyuk. – 4th ed. – Kyiv: Lybid, 2003. – 615 p.

18. Slepkan Z. I. *Scientific principles of pedagogical process in higher school*. – Kyiv: Higher school, 2005. – 239 p.

19. Nightingale M. I. *Organization and method carrying out scientific and pedagogical research by university students: a manual* / M. I. Solovey, E. Spitsyn. – Kyiv: Knowledge, 2004. – 143 p.

20. Strelnikov IN. *Components professional competence teacher higher schools* / V. Strelnikov // *Humanitarian Bulletin*. – 2013. – No. 28. – P. 278–285.

21. Ortynskyi V. L. *Pedagogy of higher education: a textbook* / V. L. Ortynskyi. – Kyiv: Center for Educational Literature, 2009. – 472 p.

22. Fomenko M. *Priority of educational work* / M. Fomenko // *Higher Education of Ukraine*. – No. 3. – 2002. – P. 47–50.

23. Tsekhmistrova G. S. *Management in education and pedagogical diagnostics: a manual*. / G. S. Tsekhmistrova. – Kyiv: Publishing House "Slovo", 2005. – 280 p.

7. Educational content

Student's independent work

Independent work constitutes 100% of the study of the credit module, which also includes preparation for the test. The main task of students' independent work is to deepen their knowledge by searching for the necessary information, forming basic skills for performing calculations in the field of mechanical engineering.

8. Policy and control

Academic discipline policy (educational component) Rules for assigning incentive and penalty points

- *Incentive points can be awarded by the teacher exclusively for the completion of creative works and working hypotheses.
But their sum cannot exceed 25% of the rating scale.*
- *Penalty points are not provided within the framework of the academic discipline.*

Deadline and Rescheduling Policy

In the event of academic arrears in an academic discipline or any force majeure circumstances,

graduate students should contact the teacher to agree on an algorithm of actions related to solving existing problems.

Academic Integrity Policy

Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the lack of references when using printed and electronic materials, quotes, opinions of other authors. Hints and copying when writing tests or conducting classes are unacceptable.

The policy and principles of academic integrity are defined in Section 3 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". More details:<https://kpi.ua/code>

Academic Conduct and Ethics Policy

Graduate students must be tolerant, respect the opinions of others, formulate objections in a correct form, and adequately provide feedback in class.

The norms of ethical behavior of students and employees are defined in Section 2 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". More details:<https://kpi.ua/code>

9. Types of control and rating system for assessing learning outcomes (RSO)

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

Semester	Study time		Distribution of teaching hours				Control measures		
	Loans	academic year	Lectures	Practical	Lab work	CRC	MKR	RR	Semester control
3	3	90	-	-	-	90	-	-	test

A student's rating in a discipline consists of the points he receives for:

Work on the report and test.

The semester test is a credit.

Current control is carried out by practice leaders from the department during the postgraduate students' pedagogical practice through analysis and evaluation of their systematic work.

The internship supervisor monitors the postgraduate student's adherence to the internship schedule and provides the postgraduate student with organizational and methodological assistance. He reviews the educational and methodological materials planned for the postgraduate student's development, must be present at lectures and practical (seminar) classes conducted by the postgraduate student. All this is reflected in the supervisor's feedback on the postgraduate student's internship.

Final control is carried out at the end of the internship by evaluating the holistic systematic pedagogical activity of postgraduate students during the internship period. When forming the assessment of postgraduate students, the level of theoretical training of the future teacher, the quality of the implementation of internship tasks, the level of mastery of pedagogical skills and abilities, attitude towards students, accuracy, discipline, the quality of documentation and the time of its

submission are taken into account.

Testing and evaluation of knowledge, skills and practical abilities of postgraduate students are carried out according to a rating evaluation system, which has two components:

- starting - intended for the internship supervisor to evaluate the applicant's activities during the internship from the practice base;
- defense component - intended for evaluating the defense of the results of the internship by the semester control commission, which includes drawing up a report on the internship, keeping a practice diary, the applicant's presentation of the results of the internship during the defense of the report, answers to questions from the semester control commission members, etc.

Based on the results of the defense, the semester control commission summarizes the scores for the starting component and the defense component, reduces them to a rating score and converts them to grades on the university scale.

The description of the internship rating system is a component of the internship work program, which is developed by the internship manager from the department and communicated to applicants before the start of the internship.

Rating (weighting) points system and evaluation criteria

Rating points system and evaluation criteria:

Report execution and report defense $R = 59 + 41 = 100$ points

Where – 59 points, assessment of the quality of the report from practice and the searcher's work on the report

- 41 points score for defending the internship report by the searcher.

The maximum score is 100. To receive credit for a credit module

"Automatic" requires a rating of at least 60 points.

A prerequisite for admission to the test is a rating of at least 40% of the rating scale (R), i.e. 40 points.

To obtain a credit score, the sum of all received rating points R

is translated according to the table:

Number of points	Rating
95...100	perfectly
85...94	very good
75...84	Good
65...74	satisfactorily
60...64	enough
$RD < 60$	unsatisfactorily
Admission conditions not met	not allowed

The working program of the academic discipline (syllabus):

Compiled by a senior lecturer of the Department of MACORI, Candidate of Technical Sciences, Alina TATARNIKOVA

Approved by the Department of the Institute of MACORI (Minutes No. 20 dated 12.06.2025)

Approved by the Methodological Commission of the Faculty (Minutes No. 11 dated 06/27/2025)