



PEDAGOGICAL PRACTICE

Work program of the discipline (Syllabus)

Details of the discipline

Level of higher education	doctor of philosophy (PhD)
Branch of knowledge	13 Mechanical engineering
Specialty	133 Industrial engineering
Educational program	
Discipline status	Normative
Form of study	Full-time (day, evening)
Year of preparation, semester	2nd year 3rd semester
The scope of discipline	2 ECTS credits 60 hours
Semester control / control measures	Test
Timetable	Scientific and pedagogical worker
Language of instruction	Ukrainian
Information about course leader / teachers	<i>Ph.D., Prof., Head каф МАХНБК</i> Kornienko Yaroslav Mykytovych che@kpi.ua
Course placement	Campus, http://ci.kpi.ua

Curriculum of the discipline

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

Pedagogical practice in the system of higher education at the third educational and scientific level is a component of professional training for scientific and pedagogical activities and is a type of practical activity of graduate students, which involves participation in the organization and implementation of teaching activities in higher education, -experimental work. During pedagogical practice, applicants for higher education develop their own style of teaching. Pedagogical practice promotes the development of professional self-awareness, culture of communication, the formation of theoretical, practical and personal-motivational components of professional competence of trainees.

The formation of practical skills and abilities of the graduate student is carried out during lectures, seminars, organization of independent work of higher education students. During the internship there is an opportunity to test the results of research conducted by the graduate student during the writing of the dissertation.

The purpose of pedagogical practice is the acquisition by graduate students of skills and experience of educational and teaching activities necessary for teaching in higher education

disciplines in the profile of the received specialty educational and scientific level of Doctor of Philosophy.

The object of practice is educational process of training specialists in professional fields of the industry 13 Mechanical engineering.

Task practices are:

1) acquisition by graduate students of abilities (competencies):

- Ability to abstract thinking analysis and synthesis (LC 1);

2) obtaining the following program learning outcomes:

PR22 Formulate learning objectives and select appropriate training material and its structure

Postgraduate students will also master the following skills:

- methods of activating the cognitive activity of students;

- principles of control of students' academic achievements and analysis of its results;

- possession of modern technologies, methods and techniques of teaching disciplines in the relevant field of training doctors of philosophy;

– creative approach to educational and methodical work, scientific activity, formation of need for self-improvement, improvement of the qualification;

- formulate educational goals and choose the appropriate educational material and its structure;

- acquired abilities to critically evaluate lectures and other types of classroom classes, formulating conclusions on the organization of their own teaching activities

2. Prerequisites and postrequisites of the discipline (place in the structural and logical scheme of education according to the relevant educational program)

Prerequisites of the discipline. Successful acquisition of competencies requires knowledge of the following disciplines: "Organization of scientific and innovative activities", "Philosophical principles of scientific activity" and "Methodology of scientific research.

Post-requisites of the discipline. Deeply understand the general principles and methods of basic sciences, as well as the methodology of scientific research, apply them in their own research in the field of mechanical engineering and in teaching practice.

3. The content of the discipline

SECTION 1. Educational and pedagogical activities

SECTION 2. Methodical activity

SECTION 3. Research activities

SECTION 4. Educational activities

4. Training materials and resources

Basic literature

1. Golovenkin, VP Pedagogy of higher school [Electronic resource]: textbook / VP Golovenkin; KPI them. Igor Sikorsky. - 2nd ed., Reworked. and add. - Electronic text data (1 file: 3.6 MB). - Kyiv: KPI named after Igor Sikorsky, 2019. - 290 p. - Name from the screen. [Electronic resource] - Mode of access to the resource: / <https://ela.kpi.ua/handle/123456789/29032>

2. Methodical recommendations on the organization of students' practice and compilation of working programs of practice of the National Technical University of Ukraine "Kyiv Polytechnic Institute named after Igor Sikorsky" [Text] / Compiled by: NM Lapenko, IL Singer, I.V. Федоренко, О.М. Шаповалова; for general ed. PM Yablonsky. - К .: KPI them. Igor Sikorsky, 2018. - 29 p.

3. Regulations on the practice of students of higher educational institutions of Ukraine [Electronic resource] - Mode of access to the resource: / http://kpi.ua/document_practice

4. Educational and scientific program of the third (educational and scientific) level of higher education in the field of knowledge 13 "Mechanical Engineering", specialty 133 "Industrial Engineering" / Compiled by: Kornienko YM, Stepanyuk AR, Sivetsky V. I., Sokolsky OL, Melnyk VM, Ruzhynska LI, Shevchuk AV, Shostachuk YO, Kyiv, KPI them. Igor Sikorsky, 2020, 20 p.

5. Temporary regulations on the organization of the educational process in KPI. Igor Sikorsky [Text] / Compiled by. VP Golovenkin; for general ed. Yu.I. Yakimenko. - Kyiv: KPI named after Igor Sikorsky, 2017. - 145 p.

6. Law of Ukraine "On Higher Education" dated 01.07.2014 № 1556-VII [Electronic resource]. - Access mode: <http://zakon4.rada.gov.ua/laws/show/1556-18>.

7. Regulations on the organization of the educational process in KPI. Igor Sikorsky. - Access mode: <http://osvita.kpi.ua/node/39>

8. Methodical recommendations on the organization of student practice and compilation of working programs of practice of the National Technical University of Ukraine "Kyiv Polytechnic Institute named after Igor Sikorsky" [Text] / Compiled by: NM Lapenko, IL Spivak, IV Fedorenko, OM Shapovalova; for general ed. PM Yablonsky. - Kyiv: KPI named after Igor Sikorsky, 2018. - 29 p.

8. Artemova LV Pedagogy and methods of higher school: teaching method. way. / LV Artemova. - Київ: Кондор, 2012. - 272 с.

9. Pedagogical acmeology: Complex of educational and methodical support of graduate students of all specialties, full-time (day / evening) form of education / Compiled by: Lozhkin GV, Volyanyuk N. Yu. - Kyiv: KPI. Igor Sikorsky, 2016. - 47 p.

10. Kuzminsky AI Pedagogy of higher school: textbook. way. / AI Kuzminsky. - 2nd type. - Київ: ЗНАННЯ, 2011. - 486 с. 8. Nachaev VM Methods of teaching in high school: textbook. way. / VM Nachaev. - Kyiv: Center for Educational Literature, 2007. - 232 p.

Supporting literature:

1. Artemova LV History of pedagogy of Ukraine: textbook / LV Artemova. - Kyiv: Lybid, 2006. - 424 p.

2. Zyazyun IA The beauty of pedagogical action: textbook. way. / Zyazyun IA, Sagach GM - Kyiv: Ukrainian-Finnish Institute of Management and Business, 1997. - 302 p.

3. Halperina V. Some issues of research of state educational policy / V. Halperina // Higher education of Ukraine. - № 4. - 2002. - P. 70–76.

4. Golovko L. Activation of independent work of the student during lectures / L. Golovko // Education and management. - Vol.5. - № 3. - 2002. - P. 147–151.

5. Carnegie D. How to develop self-confidence and influence people by speaking in public / D. Carnegie. - Kyiv: Globus, 1995. - 184 p.

6. Kuzminsky AI Pedagogy: tasks and situations: workshop / AI Kuzminsky, LP Vovk, VL Omelyanenko. - Київ: ЗНАННЯ-Прес, 2003. - 429 с.

7. Moroz OG The first steps to mastery / OG Moroz, VL Omelyanenko / Resp. ed. W. J. Willow. - Kyiv: Knowledge of Ukraine, 1992. - 112 p.

8. Moiseyuk NE Pedagogy: textbook. manual / NE Moiseyuk. - 4th type. - Kyiv: Lybid, 2003. - 615 p.

9. Slepkan ZI Scientific principles of the pedagogical process in higher education. - Kyiv: Higher School, 2005. - 239 p.

10. Solovey MI Organization and methods of conducting scientific and pedagogical research by university students: manual / MI Solovey, E. Spitsyn. - Kyiv: Knowledge, 2004. - 143 p.

11. Strelnikov V. Components of professional competence of a high school teacher / V. Strelnikov // Humanitarian Bulletin. - 2013. - № 28. - P. 278–285.

12. Ortynsky VL Pedagogy of higher school: textbook. manual / VL Ortynsky. - Kyiv: Center for Educational Literature, 2009. - 472 p.

13. Fomenko M. Priority of educational work / M. Fomenko // Higher education of Ukraine. - № 3. - 2002. - P. 47–50.

14. Tsekhmistrova GS Management in education and pedagogical diagnostics: textbook. way. / GS Tsekhmistrova. - Kyiv: VD "Slovo", 2005. - 280

Educational content

5. Methods of mastering the discipline (educational component)

Topics	Learning outcomes
<i>SECTION 1. Educational and pedagogical activity</i>	
<i>Educational work</i>	<p>Know:</p> <ul style="list-style-type: none"> - basic concepts of pedagogy and teaching methods in higher education; - modern approaches to the formation of students' professional competence. <p>Be able:</p> <ul style="list-style-type: none"> - plan individual teaching activities, prepare for classes; - to conduct various types of classes according to the schedule in the assigned academic group; - to structure the content of educational material for conducting various types of educational classes; - prepare didactic material; - check students' written works; - to hold consultations.
<i>SECTION 2. Methodical activity</i>	
<i>Methodical work</i>	<p>Know:</p> <ul style="list-style-type: none"> - Features of the organization of the educational process in higher education; - the content of education in the chosen specialty (programs of disciplines (syllabuses) in academic disciplines, textbooks, manuals, guidelines). <p>Be able:</p> <ul style="list-style-type: none"> - make a thematic plan and plans for individual classes; - prepare tasks for independent work, tasks for current, modular or final types of control, etc.
<i>SECTION 3. Research activities</i>	
<i>Scientific research work</i>	- ability to use special technologies and management methods in their own research
<i>SECTION 4. Educational activities</i>	
<i>Educational Activities</i>	<p>Know the features of the organization of educational work at the university, faculty, academic group.</p> <p>Be able:</p> <ul style="list-style-type: none"> - plan educational work in the academic group; - prepare and conduct educational activities;

Topics	Learning outcomes
	- to make the psychological and pedagogical characteristic both of separate students, and collective of group as a whole.

6. Independent work of a graduate student

During pedagogical practice, the graduate student has the opportunity to test the results of research conducted by him when writing a dissertation.

Policy and control

7. Course policy (educational component)

Postgraduate students working on the material:

Independently:

- Prepare:
 - methodical materials for lectures;
 - methodical materials for conducting practical work (computer workshops);
 - methodical materials for laboratory work;
 - methodical material on preparation and performance of individual tasks;
 - Presentation material for classes;
- Form a report on practice.

under the guidance of the supervisor, teachers of disciplines for which the graduate students are assigned and the person responsible for the practice:

- 1) Under the guidance of the supervisor within the topic of the dissertation consider:
 - possible disciplines that will be assigned to graduate students in practice, taking into account the research of the dissertation,
 - agree and approve, with the leading teachers of the department in selected disciplines, the topics of lectures / practical works (computer workshops) / laboratory works and individual tasks on which graduate students will prepare methodical material;
 - consider the possibility of external consultations on the implementation of research on the topic of the dissertation in the educational process of the department or other research institutions;
 - form and discuss the response of the supervisor on the relevance of the practice to the topic of the dissertation and the research used in academic disciplines.
- 2) Under the guidance of leading teachers responsible for the development of disciplines:
 - develop methodical materials and presentations on conducting lectures / practical works (computer workshops) / laboratory works;
 - develop recommendations for the preparation and implementation of individual tasks;
 - when approving the materials, provide a reasonable own position and assessment of the presented material, and take into account the comments of leading teachers of the discipline;
 - take part in the discussion of the classes and analysis of the main mistakes in their conduct. Receive conclusions about the lessons from the leading teacher.
- 3) Under the guidance of the person in charge of the practice:
 - receive advice on the preparation of documents on practice;
 - form a package of documents on practice;
 - are preparing to defend the practice.

In defense of the practice (meeting of the department), the scientific supervisors of the dissertation, teachers of the department (in the disciplines involved in practice) and the person in

charge of practice from the department report on the implementation of graduate students in practice of their individual tasks.

In case of non-fulfillment by the graduate student of the timely approved calendar plan (without a good reason) at the meeting of the department a decision may be made not to admit the student to the defense of the internship and his further expulsion from the university.

The graduate student is suspended from practice or whose work in practice is considered unsatisfactory, is considered not to have fulfilled the individual plan and according to the Procedure for training higher education candidates for PhD and doctoral degrees in higher education (scientific institutions), approved by the Cabinet of Ministers on March 23, 2016 is subject to deduction.

Assignment of incentive and penalty points

Incentive points for:

- 1) Active work with leading teachers of the department (recommendation from them to provide additional points) - 10 points;

Penalty points for:

- 1) Late submission of documents - 10 points;

The sum of both penalty and incentive points should not exceed $0.1 \text{ RC} = 100 \text{ points} \times 0.1 = 10 \text{ points}$.

Policy of deadlines and rearrangements

Particular attention is paid to the timely submission of documents on the practice and the implementation of the individual plan of practice of the graduate student.

Postgraduate students have the right to challenge the scores for the task, but must be reasoned, explaining which criteria they do not agree with according to the evaluation letter and / or comments.

Detailed criteria for evaluating the results of postgraduate learning are defined in the regulations on RSO in practice, which is an appendix to the curriculum of the discipline and in Appendix A to the syllabus.

University policy

Academic integrity

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

Norms of ethical behavior

Norms of ethical behavior of graduate students and employees are defined in Section 2 of the Code of Honor of the National Technical University of Ukraine "Kyiv Polytechnic Institute named after Igor Sikorsky". Details: <https://kpi.ua/code>.

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

Final control is carried out at the end of the internship by assessing the holistic systematic pedagogical activities of the graduate student during the prescribed period. When setting a differentiated assessment of a graduate student, the level of theoretical training of the future teacher,

the quality of practice, the level of mastery of pedagogical skills, attitude to students, accuracy, discipline, quality of documentation and time of its submission are taken into account. The defense of the practice is estimated at 30 points.

Distribution of points received by graduate students for practice

№ p / p	Type of work	Scores
1	Preparation of lecture notes and presentation material for them	20
2	Methodical instructions (protocols) for execution practical works (computer workshops) / laboratory works / individual tasks	20
3	Methodical instructions for performance of individual tasks by students	10
4	Correspondence of the content of the report to the program of practice (the report is collected and structured in full), performance of the individual task (it is opened completely / partially)	10
5	Presentation to defend the results of practice	10
6	Report and defense of practice	30
7	Penalty / incentive points (not included in the calculation of 100 points for practice)	10
	Total points:	100

Conditions of admission to semester control: is the implementation of an individual plan for practice, providing a diary of practice, report on practice and appendices to it (guidelines for lectures / practical work (computer workshops) / laboratory work / individual tasks; feedback from teachers on the lessons; feedback from the supervisor on compliance of the conducted practice to the topic of the dissertation and the use of scientific research in academic disciplines, as well as a starting rating (rC) of not less than 40% of RS, ie 40 points

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

<i>Scores</i>	<i>Rating</i>
100-95	Perfectly
94-85	Very good
84-75	Fine
74-65	Satisfactorily
64-60	Enough
Less than 60	Unsatisfactorily
Admission conditions are not met	Not allowed

9. Additional information on the discipline (educational component)

Recommendations for graduate students

General

During the internship, graduate students gain new knowledge, skills and abilities, mainly during specific lectures and practical classes under the guidance of leading NPP departments. Therefore, the work of graduate students in full-time positions (with or without pay) is the most appropriate in comparison with the internship of backups, in fact, outside observers.

Quite often during the internship graduate students are involved by the administration (department) to assist in the development of educational and methodological documentation (publication of manuals, licensing, development of methodological documentation, etc.). The nature of such practice must strictly comply with the profile of study and the topic of the graduate student's dissertation and the duration should not interfere with the implementation of the work plan of the graduate student.

To the report

Report section	The volume of the section	Summary of the section
Review of literature sources	2-5 pages.	List the main methods of conducting classes (lectures, workshops, etc.)
Analytical part	5-7 pages.	Based on section 1, analyze the existing methods for conducting classes and justify the most receptive of them for conducting classes at the department
The practical part	25-30 pages	Describe the methods used during the internship (with the insertion of screenshots) by types of lectures, practical work (computer workshops), laboratory work and individual tasks. Also by types of classes with the help of screenshots show the formation, content, assessment of students on campus or Google classroom
General conclusions	2-3 pages	Analysis of the applied methods of conducting classes. Indicate their disadvantages and advantages in distance / full-time training
references	2-3 pages (at least 15 sources)	List of literature sources.
Appendices to the report	The report is not included in the calculation	Methodical recommendations for lectures / practical works (computer workshops) / laboratory works / individual tasks

Distance Learning

Synchronous distance learning using video conferencing platforms and a distance learning educational platform at the university is possible.

Inclusive education

It is allowed, according to the provisions of the Igor Sikorsky KPI on inclusive education.

Work program of the discipline (syllabus):

Folded:

Ph.D., Prof., Head kaf. MAKHNV Kornienko Yaroslav Mykytovych

Approved at the meeting of the Department of Machines and Apparatus of Chemical and Oil Refining (Protocol № 26 of 19 June 2021)

Agreed metodic commission of the Faculty of Engineering and Chemistry (Protocol № 11 of June 25, 2021)

RATING SYSTEM FOR ASSESSING LEARNING OUTCOMES
in the discipline
Pedagogical practice

form of education _____ day / evening _____

The rating of the postgraduate student in practice consists of points that he receives for the following control measures:

1	Evaluation of a written report of a graduate student	10
2	Methodical instructions (protocols) for practical work (computer workshops)	20
3	Summary of lectures and presentation material for them	20
4	Methodical instructions for performance of individual tasks by students	10
5	Defense presentation	10
6	Report and defense of practice	30
Total		100

System of rating (weight) points and evaluation criteria

1. Practice report

Weight score - 10.

Evaluation criterion

"Excellent", (at least 90% of the required information)	10-9 points
"Good", (at least 75% of the required information)	8-7 points
"Satisfactory", (not less than 60% of the required information)	6 points
"Unsatisfactory", does not meet the requirements of "Satisfactory",)	0 points

2. Methodical instructions (protocols) for practical work (computer workshops)

Weight score - 20.

Evaluation criterion

"Excellent", (at least 90% of the required information)	20-18 points
"Good", (at least 75% of the required information)	17-15 points
"Satisfactory", (not less than 60% of the required information)	14-12 points
"Unsatisfactory", does not meet the requirements of "Satisfactory",)	0 points

3. Summary of lectures and presentation material for them

Weight score - 20.

Evaluation criterion

"Excellent", (at least 90% of the required information)	20-18 points
"Good", (at least 75% of the required information)	17-15 points
"Satisfactory", (not less than 60% of the required information)	14-12 points
"Unsatisfactory", does not meet the requirements of "Satisfactory",)	0 points

4. Methodical instructions for performance of individual tasks by students

Weight score - 10.

Evaluation criterion

"Excellent", (at least 90% of the required information)	- 10-9 points
"Good", (at least 75% of the required information)	- 8-7 points
"Satisfactory", (not less than 60% of the required information)	- 6 points
"Unsatisfactory", (does not meet the requirements of "Satisfactory",)	- 0 points

5. Presentation

Weight score - 10.

Evaluation criterion

"Perfectly"	Illustrative material (presentation) fully, with high clarity, reveals the main provisions of the work submitted for defense. The material is made with the help of modern graphic packages in compliance with the requirements of regulatory documents.	- 10-9 points
"Fine"	Illustrative material (presentation) fully, but with insufficient clarity, reveals the main provisions of the work. The material is made with the help of modern graphic packages, there are slight deviations from the requirements of regulatory documents.	- 8-7 points
"Satisfactorily"	Illustrative material (presentation) does not fully and with insufficient clarity reveal the main points	- 6 points
"Not satisfactory"	Does not meet the criterion "Satisfactory"	- 0 points

6. Report and defense of practice

Weight score - 30.

Evaluation criterion with the definition of four levels

"Perfectly"	The student clearly and fully revealed the purpose of the practice, ways to achieve it, deeply argues the decisions made. The answers to the questions demonstrate the student's ability to professionally defend his own point of view, as well as the fact that he has professional knowledge at the current level.	30-27 points
"Fine"	The student clearly and fully discloses the purpose of the practice, ways to achieve it, deeply argues the decisions made, but assumes insignificant errors and inaccuracies. The student can professionally defend his own point of view. The answers to the questions are essentially correct, but not always sufficiently complete and reasoned.	26-22 points
"Satisfactorily"	The report on the practice is essentially true, but constructed illogically, vaguely, has many inaccuracies. The answers to the questions are incomplete, there are significant inaccuracies in the reasoning of decisions.	21-18 points
"Not satisfactory"	Does not meet the criterion "Satisfactory"	0 points

Rating scale (R):

The sum of weight points of control measures during the semester is:

$$RC = RD = 10 + 20 + 15 + 15 + 10 + 30 = 100 \text{ points}$$

Incentive points for:

- 2) Active work with leading teachers of the department (recommendation from them to provide additional points) - 10 points;

Penalty points for:

- 2) Late submission of documents - 10 points;

The sum of both penalty and incentive points should not exceed $0.1 RC = 100 \text{ points} \times 0.1 = 10 \text{ points}$.

A necessary condition for admission to the protection of practice is the implementation of an individual plan for practice, providing a practice diary, a report on practice and appendices to it (guidelines for lectures / practical work (computer workshops), / laboratory work / individual tasks); feedback from teachers on the lessons, feedback from the supervisor on the relevance of the practice to the topic of the dissertation and the use of research in academic disciplines, as well as a starting rating (rC) of at least 40% of RS, ie 40 points.

To obtain the student appropriate grades (ECTS and traditional) his rating **RD** translated according to the table:

RD = rC + rE	Rating
95... 100	perfectly
85... 94	Very good
75... 84	Fine
65... 74	satisfactorily
64 60 .60	enough
RD ≤ 60	unsatisfactorily
rC < 40 or other conditions of admission to practice are not fulfilled	not allowed