National Technical University of Ukraine
"Igor Sikorsky Kyiv Polytechnic Institute"

Computer Systems Software Department

PRACTICE OF MASTERS OF EDUCATIONAL AND PROFESSIONAL TRAINING

Syllabus

Course Requisites

Cycle of Higher Education	***Second (master's)***

Field of Study	*12 Information Technologies*
Speciality	*121 Software engineering*
Educational program	*Software Engineering of Multimedia and Information Retrieval Systems*
Discipline status	*Normative*
Study form	*Full-time*
Year of study, semester	*2nd year, spring semester*
ECTS workload	*14 credits (ECTS).*
Testing and assessment	*Final test*
Course Schedule	*8 weeks, according to the University Order Classes by the timetable http://rozklad.kpi.ua/*
Language	*English*
Course Instructors	*PhD., Associate Professor, Vasyl Yurchyshyn, vasylPZKS@gmail.com*
Access to the course	*Google classroom: http://fpm.kpi.ua/archive*

Outline of the Course

1. Course description, goals, objectives, and learning outcomes

The practice of professional masters is one of the important practical disciplines of training specialists in higher education, and the practice is one of the final stages of training in the educational and professional direction of training in higher education institutions of Ukraine. The practice of professional masters is a mandatory component of the educational and professional program of master's training in the specialty 121 Software engineering and is aimed at the student's acquisition of professional skills and the ability to carry out independent research work. The purpose of the credit module is to form students' ability to:

1) systematize, expand and consolidate professional knowledge;
2) form the initial competencies of conducting independent scientific work;
3) conduct independent research and experiments.

The essence of the practice is to involve graduate students in independent research work, familiarization with the methodology of conducting research work in academic and specialized institutes, leading companies.

The subject of research practice is the deepening of independent research skills work, expansion of students' scientific worldview, research of the chosen problem and the ability to connect it with the theoretical direction of research, to determine the structure, logic and content of the future master's work. According to the requirements of the educational and professional program, after learning the "Practice" credit module, students must demonstrate the following learning outcomes:

competences:

1. The ability to show initiative, innovation and entrepreneurship.
2. Ability to use and adapt to solve scientific and applied problems studies obtained in the process of education, theoretical knowledge and practical skills;
3. Ability to formalize and solve complex tasks and problems that require update and integration of

knowledge, often in conditions of incomplete, inaccurate or insufficient information and conflicting requirements.

4. Demonstrate knowledge and understanding of basic concepts, principles of real implementation scientific and applied developments for enterprises, institutions and organizations

knowledge:

1. Theoretical classical sources on a selected scientific problem related to specialization of the department and in accordance with the scientific problem of the study regarding future master's thesis;

2. Demonstrate knowledge and understanding of basic concepts, principles of real implementation scientific and applied developments for enterprises, institutions and organizations.

3. Methods of obtaining knowledge from large volumes of data, evaluation and interpretation methods found regularities.

4. methods and technologies for describing the model of the research object and the relationships between elements of the model, methods of evaluating the obtained results;

5. Current state standards, ISO, departmental norms, methods and instructions on designing;

6. rules of labor protection, safety techniques and industrial sanitation.

skill:

1. Collect, systematize and analyze scientific and technical information on issues professional activity.

2. Apply the mathematical apparatus when solving actual problems in practice.

3. Build models of complex systems and choose methods of their research, implement built models programmatically and check their adequacy using computer.

4. Formalize the statement of the problem.

5. Conduct scientifically based analysis and selection of methods and tools for solving real scientific and applied research.

skills:

1. Acquisition of skills for producing scientific results;

2. Acquisition of skills to logically, consistently and accurately formulate one's thoughts and present information in professional communication, develop documents.

3. Acquisition of professional competences in the specialty and the ability to position oneself in the labor market.

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 "Practice" is planned in the 3th semester of the 2nd year for masters in the educational-scientific program with the specialty 121 Software engineering provides a single comprehensive approach to the organization of practical training, systematicity, continuity and continuity of students' education.

Prerequisites are the main disciplines that students studied during the previous period Master's studies.

Post-requisites of the discipline "Practice" are:

1. The first full version of the master's thesis (MD).

2. Approbation of the obtained results in the form of theses for participation in scientific and practical conferences or publication in a professional publication.

3. Defense of the practice report.

2 Content of the academic discipline

Market requirements for the qualification level of masters graduates of technical higher education institutions of Ukraine require the presence of theoretical, applied, technological and other types of competences, necessary for the production of goods and services in modern high-tech conditions production, fierce competition, limitation of production resources, risks and uncertainty of market conditions.

Peculiarities of the educational and scientific programs of master's training in technical higher education institutions of Ukraine, and leading technical universities of the world, in most cases, combine scientific research and technological components for the preparation of master's theses and acquisition of professional competences. There is no exception to the combination of such requirements and for specialties of the IT industry, in particular for the specialty F2 Software engineering under the OPP Software engineering of multimedia and information-search systems.

The presence of a research component in the master's thesis is mandatory not only for masters of educational and scientific, but also educational and professional training programs. Scientific novelty can refer to both theoretical and applied scientific results of research

3 Educational materials and resources

1. Regulations on the organization of the educational process at Igor Sikorskyi KPI: approved by 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. Regulations on the procedure for the practice of higher education applicants of the National Technical University of Ukraine "Ihor Sikorsky Kyiv Polytechnic Institute" approved by order of the Rector, ORDER No. 7/172 dated 09/24/2020. [electronic resource] . - Mode access - https://document.kpi.ua/files/2020_7-172.pdf. - Title from the screen. - Ukrainian language.

3. Methodological recommendations on the organization of students' practice and the composition of workers of practice programs of the National Technical University of Ukraine "Kyiv Polytechnic Igor Sikorskyi 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.

4. Educational and professional program of the second (master's) level of higher education Specialty 121 Software engineering. - [electronic resource] . – Access mode - https://osvita.kpi.ua/121_OPPM_IPZMIPS.

Educational content

4 Methods of mastering an educational discipline (educational component)

Practice can take place at an enterprise, organization or educational institution. Management of practice from the university is carried out by the teacher of the department, who is responsible for internship, supervisor of final qualification work, from the company — a manager from among specialists by specialty profile.

The head of practice from the department ensures the implementation of all organizational measures before at the beginning of practice: instruction on the procedure for passing practice; giving students-interns need documents: referral to practice, practice diary. The head of the final qualification work provides consultations on issues related to writing a master's thesis.

The practice begins with the mandatory instruction for all students safety techniques at the enterprise and workplaces, familiarization with the internal rules schedule.

Regulations on the practice of higher education applicants of KPI named after Igor Sikorsky (Order No. 7-172 dated 09/24/2020 regulates the duties of the head of practice and the student.

The head of practice from the department must:

- to develop working practice programs and coordinate them with the practice bases no later than two weeks before the start of practice;

- to warn students about the preparation of a medical certificate about the state of health (v if necessary) 7 days before the start of practice;
- no later than 7 days before the start of practice, provide practice bases with lists of students- interns for issuing temporary passes;
- prepare to provide a student or a group of students with a referral for practice;
- when sending two or more students for practice, appoint a senior of the group, who is the assistant to the head of the practice;
- hold meetings with students and acquaint them with work practice programs; - issue diaries with individual tasks and a calendar plan to students conducting practice;
- to ensure the timely arrival of students at the practice bases and monitor their progress practices;
- systematically, at least once a week, advise students and control the stages of individual task execution 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;
- draw up a report on going to work, as well as conduct a briefing on safety techniques, if students undergo practice in structural divisions university;
- to submit to the dean's office a report on the results of the internship with proposals regarding it improvement.

***University students are obliged to**:*

- before the beginning of the internship, get a referral from the internship supervisor of the department for practice, work program of practice and practice diary;

- arrive at the practice base on time;

- to fully perform all tasks provided for in the work program practice, and instructions of its managers;

- to know and strictly observe the rules of labor protection, safety techniques and industrial sanitation and internal procedures of the enterprise.

5 Independent work of student

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

1. Definition of the object and subject of research taking into account the practice base (enterprises/institutions).

2. Forming the content of the individual task together with the scientific director of the MD.

3. Determination of the terms and scope of the necessary theoretical research and calculations.

4. Collection and systematization of information about the research object.

5. Description of the research object model.

6. Evaluation of relationships between model elements.

7. Formulation of the statement of the problem for writing a master's thesis.

8. Analysis and selection of methods and technologies for the implementation of the given task.

9. Forming a practice report.

Policy and control

6 Policy of academic discipline (educational component)

Practice report requirements

After the internship, students must present the internship to the head of the department a written report together with a diary within the prescribed period (no later than three days after end of practice) for verification, review and admission to defense. The internship report must contain information about the student's implementation of the internship program and individual task. Systematization of the

collected materials is carried out by the student under time of practice and is completed during the time specially allocated for this purpose, respectively to 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 MD is performed, short argumentation of the relevance of the declared research, a short summary of the sections report
4. Formalization of the formulation of the MD problem (object, subject and purpose of research, final result of execution of MD).
5. The first full version of MD with all sections and appendices completed. MD consists of such elements:
- Title page of the prescribed sample;
- Tasks for the master's thesis" 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;
- Appendix A to MD - Demonstration version of the software (architecture, a brief description of functionality, programming language, work results software, etc.).
- Appendix B to the MD - Presentation of the first full version of the MD with all completed Sections.
- Appendix B to MD - theses of a report at a selected conference or another publication on the topic of MD (published or accepted for publication) in professional publication.
6. Conclusions to the report.

Summary of practice

The report is defended by the student at the commission appointed by the head of the department. Of the the commission includes practice managers from the department and two teachers of the department. Commission takes credit within the first 3-5 days after the end of practice.

In order to be admitted to practice credit, a student must present a commission (no later than three days before the end of practice) for checking and reviewing:
1) practice report;
2) presentation of the practice report;
3) practice diary.

7 Types of control and rating system for evaluating learning outcomes

Current control: checking the practice diary every week. Semester control: defense of the practice report, credit.

Conditions for admission to the semester control: a minimum positive grade for performance individual task - 60 points. Evaluation criteria:

1) Availability of documents: practice report; presentation of the practice report; diary practices - 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.

The final performance score or the results of Final test the Fail/ Pass are adopted by university grading system as follows:

Points	*Grade*
100-95	Excellent
94-85	Very good
84-75	Good
74-65	Satisfactorily
64-60	Enough
< 60	Unsatisfactorily
Admission conditions are not met	Not admitted

Course syllabus:

Is created by PhD, Associate Professor Vasyl Yurchyshyn

Approved by Computer Systems Software Department (protocol №15, 15.04.2026)

Approved by the Applied Mathematics Faculty Methodology Commission (protocol №11, 22.05.2026).