



# STANDARDIZATION AND TECHNOLOGIES FOR MULTIMEDIA AND INFORMATION RETRIEVAL SOFTWARE PRODUCTS DEVELOPMENT. COURSE WORK Syllabus

## 1. Requisites of the Course

Cycle of Higher Education	<i>First cycle of higher education (bachelor's degree)</i>
Field of Study	<i>12 Information Technologies</i>
Speciality	<i>121 Software engineering</i>
Education Program	<i>Software Engineering of Multimedia and Information Retrieval Systems</i>
Type of Course	<i>Elective</i>
Mode of Studies	<i>full-time</i>
Year of studies, semester	<i>3 year (6 semester)</i>
ECTS workload	<i>5 credits (ECTS)., including 54 hours of classroom work, and 66 hours of self-study.</i>
Testing and assessment	<i>Credit</i>
Course Schedule	<i><a href="http://rozklad.kpi.ua/">http://rozklad.kpi.ua/</a></i>
Language of Instruction	<i>English</i>
Інформація про керівника курсу / викладачів	KP Protection Acceptance Commission: PhD, Associate Professor, Lesya Lyushenko, <a href="mailto:LyushenkoL@gmail.com">LyushenkoL@gmail.com</a> PhD, Associate Professor, Tetanya Zabolotnya, <a href="mailto:tetiana.zabolotnia@gmail.com">tetiana.zabolotnia@gmail.com</a>
Розміщення курсу	MS Teams. Accessisgranted to registered students.

## Outline of the Course

### Course description, goals, objectives, and learning outcomes

*The purpose of studying the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" is the formation of students' abilities and:*

- analyze the requirements for the software system and the conditions of their operation;*
- study of the subject area of software modeling;*
- identification of the business process for modeling the software system;*
- choose a methodology for modeling software systems;*
- collect primary information for modeling the business process;*
- carry out functional modeling;*
- carry out scenario modeling*
- to carry out modeling of information flows and data flows;*
- determine process metrics;*
- document the process and prepare the process for automation.*

*The subject of the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" are methods, technologies, standards used to develop models of multimedia and information-search software products.*

*Study of the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" contributes to the formation of students with:*

**general competencies (GC)**

**GC 01** Ability to abstract thinking, analysis and synthesis.

**GC 02** Ability to apply knowledge in practical situations.

**GC 05** Ability to learn and use modern knowledge.

**professional competencies (PC)** necessary for solving practical problems of professional activity related to the creation of information retrieval systems:

**PC02** Ability to participate in software design, including its structure, behavior and functioning processes modeling (formal description).

**PC04** Ability to formulate and ensure software quality requirements in accordance with customer requirements, specifications and standards.

**PC05** Ability to follow specifications, standards, rules and recommendations in the professional field during the life cycle processes implementation software.

**PC19** Ability to develop software for multimedia and mulsemedia systems.

*Study of the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" contributes to the formation of students of the following program learning outcomes (PLO) in the educational program:*

**PLO03** To know the software life cycle basic processes, phases and iterations.

**PLO04** To know and apply professional standards and other regulatory documents in the field of software engineering.

**PLO16** To have the software development, design approval and all types of software documentation release skills.

**PLO17** To be able to apply methods of component software development.

**PLO18** To know and be able to apply information technology of processing, storage and transmission of data.

**PLO19** To know and be able to apply software verification and validation methods.

**PLO32** To be able to develop and analyze full cycle models for multimedia and information retrieval systems software creation.

**PLO33** To be able to organize a software product management complete cycle.

**PLO36** To be able to manage the creation and implementation of software projects in accordance with international standards.

**PLO37** To know and to be able to manage the creation and implementation of software projects according to the standards PMBOK, SWBOK, BPMCBOK.

- **Prerequisites and post-requisites of the course (the place of the course in the scheme of studies in accordance with curriculum)**

*The successful study of the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" is preceded by the study of the disciplines*

*"Algorithms and Data Structures", "Programming" and "Components of Software Engineering" of the curriculum for the preparation of bachelors in the specialty 121 Software Engineering.*

*Theoretical knowledge and practical skills obtained during the assimilation of the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" ensure the successful study of "Software Security", the implementation of course projects and bachelor's diploma projects in the specialty 121 Software Engineering.*

#### **Typical task for a curated project**

- 1. Choose processes for modeling the software system.*
- 2. Perform functional modeling*
- 3. Perform scenario modeling*
- 4. Perform modeling of information flows and data flows*
- 5. Define process metrics*
- 6. Document processes*
- 7. Draw up an explanatory note to the course work*
- 8. Defend a course project*

#### **Organization of protection and implementation of the course project**

- 1. The course project is carried out individually.*
- 2. An explanatory note to the term paper is provided for verification. After a positive assessment of the explanatory assessment, the course work is defended.*
- 3. The course project is defended in the form of a project presentation*

#### **Schedule of the course project**

<i>No</i>	<i>Task name</i>	<i>Deadlines</i>
<i>1.</i>	<i>Choose processes for software system modeling</i>	<i>2nd Sunday of the semester</i>
<i>2.</i>	<i>Perform functional modeling</i>	<i>5th Sunday of the semester</i>
<i>3.</i>	<i>Perform scenario modeling</i>	<i>8th Sunday of the semester</i>
<i>4.</i>	<i>Perform modeling of information flows and data flows</i>	<i>10th Sunday of the semester</i>
<i>5.</i>	<i>Define process metrics</i>	<i>11th Sunday of the semester</i>
<i>6.</i>	<i>Document processes</i>	<i>13th Sunday of the semester</i>
<i>7.</i>	<i>Draw up an explanatory note to the course work</i>	<i>15th Sunday of the semester</i>
<i>8.</i>	<i>Defend a course project</i>	<i>17th Sunday of the semester</i>

#### **Learning Materials and Resources**

##### ***Basic literature:***

*Educational materials on the discipline "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development. Course work" use to master practical skills in the discipline. Materials are in MS Teams. Access is granted to registered students.*

**Policy of the discipline (educational component)**

- Adherence to the policy of academic integrity.
- About the object is carried out according to the approved topic. The change in the topic of the project takes place with the approval of the teacher.

**Types of control and rating system for evaluating learning outcomes**

The maximum number of points for a course project: 100 points.

Criteria for assessing the quality of the development of a graph model of processes:

24-25 points – the development was carried out efficiently, in full;

20-23 points – the development was carried out efficiently, in full, but has minor drawbacks;

6-19 points – the development was carried out in sufficient volume, but contains shortcomings;

0-5 points – the development is not completed in full or contains significant shortcomings.

Criteria for assessing the quality of the description of the order of execution of processes:

24-25 points – a description of the order of the process performed qualitatively, in full;

20-23 points – a description of the order of the process performed qualitatively, but has minor drawbacks;

6-19 points – a description of the order of the process performed qualitatively, but contains shortcomings;

0-5 points – a description of the order of the process performed qualitatively, not in full or contains significant shortcomings.

Criteria for assessing the quality of writing an explanatory note:

24-25 points – writing an explanatory note was completed with high quality, in full;

20-23 points – writing an explanatory note was done with high quality, but has minor drawbacks;

6-19 points – writing an explanatory note was done with high quality, but contains shortcomings;

0-5 points – writing an explanatory note is not completed in full or contains significant shortcomings.

Criteria for assessing the quality and completeness of the presentation:

10-15 points – the presentation and demonstration were made at a high level, there are no comments;

6-9 points – the presentation and demonstration are performed qualitatively, but there are drawbacks;

1-5 points – the presentation and demonstration are made at an acceptable level, but there are significant drawbacks;

0 points – the presentation and demonstration were performed poorly.

Criteria for assessing the timeliness of the submission of work to the defense:

10 baliv – the course project is carried out in accordance with the calendar plan and is protected no later than the specified period;

5 baliv – the course project is carried out not in accordance with the calendar plan, but is protected no later than the specified period;

0 points – the work is submitted to the defense later than the specified period.

The maximum number of points for the implementation and defense of coursework: 25 points + 25 points + 15 points + 10 points = 100 points.

Semester control: credit.

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

Score	Score
100-95	Perfectly
94-85	Very good
84-75	Well
74-65	Satisfactory
64-60	Enough
Less than 60	Disappointing
Admission conditions not met	Not allowed

**Additional information on the discipline (educational component)**

*The list of questions submitted for semester control is provided in Appendix 1.*

**Work program of the discipline (syllabus):**

**Compiled by** Candidate of Technical Sciences, Associate Professor, L.A. Liushenko

**Adopted by** Computer Systems Software Department (protocol № 12 from 26.04.23)

**Approved by** the Faculty Board of Methodology (protocol № 10 from 26.05.23)