



IT Project Management

Syllabus

Реквізити навчальної дисципліни

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>4 year (7 semester)</i>
ECTS workload	<i>4 credits (ECTS)., including 54 hours of classroom work, and 66 hours of self-study.</i>
Testing and assessment	<i>Credit</i>
Course Schedule	<i>http://rozklad.kpi.ua/</i>
Language of Instruction	<i>English</i>
Course Instructors	Lecturer: PhD, Associate Professor, Lesya Lyushenko, email LyushenkoL@gmail.com Teacher of practical work: PhD, Associate Professor, Lesya Lyushenko, email LyushenkoL@gmail.com
Access to the course	<i>MS Teams. Access to registered users.MS Teams.</i>

Outline of the Course

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

The study of the discipline "IT Project Management" allows students to form the competencies necessary for solving practical problems of professional activities related to IT project management and acquiring knowledge of methods and project management in the field of IT, methods of logical-structural analysis and risk assessment methods, with ways of forming a project concept, features of applying international standards of project management to create software.

***The purpose** of studying the discipline "IT Project Management" is to form the ability of students to systematically approach: software creation projects; analysis of requirements for information software systems and functional capabilities by project stakeholders; in addition, the acquisition of skills to perform: initiate, plan, execute and complete software projects using international standards and "best practices" (VAVOK, SWEBOK, PMBOK, etc.), as well as acquisition by applicants of competencies to form a standardized approach to documenting IT projects.*

***The subject** of the discipline "IT Project Management" are methods, technologies and models that are used to manage projects for the development, implementation and maintenance of software systems.*

The study of the discipline "IT Project Management" contributes to the formation of general competencies (GC) among students, namely:

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

***GC 03** Ability to communicate in the state language both orally and in writing.*

GC 04 Ability to communicate in a foreign language both orally and in writing.

GC 05 Ability to learn and use modern knowledge.

During the study of the discipline, applicants form professional competencies (PC) necessary for solving practical problems of professional activity related to project management for the development, implementation, improvement and operation of software information systems, namely:

PC03 Ability to develop software systems architectures, modules and components.

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

PC13 Ability to reasonably select and master software development and maintenance tools.

PC21 Ability to identify, analyze and document software requirements for multimedia and information retrieval systems

PC22 Ability to create innovative startup projects, calculate basic technical and economic indicators and develop business models of multimedia software and information retrieval systems innovative startup projects that have commercial potential for investment.

The study of the discipline "IT Project Management" contributes to the formation of the following programmatic learning outcomes (PLO) for students in the educational program:

PLO01 To analyze, purposefully search and select the necessary information and reference resources and knowledge to solve professional problems, taking into account modern advances in science and technology.

PLO02 To know the professional ethics code, understand the social significance and cultural aspects of software engineering and adhere to them in professional activities.

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.

PLO05 To know and apply relevant mathematical concepts, domain methods, system and object-oriented analysis and mathematical modeling for software development.

PLO06 Ability to select and use the appropriate task of software development methodology.

PLO12 To apply effective approaches to software design in practice and knowledge structures.

PLO14 To apply in practice instrumental software tools for domain analysis, design, testing, visualization, measurement and documentation of software.

PLO31 To be able to identify, analyze and document software requirements for multimedia and information retrieval systems

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

Successful study of the discipline "IT Project Management" is preceded by the study of the disciplines "Components of software engineering", "Group Dynamics and Communications", "Standardization and Technologies for Multimedia and Information Retrieval Software Products Development", "Programming" and "Software of information retrieval systems", implementation of course projects 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 "IT Project Management" ensure the successful implementation of the diploma design in the specialty 121 Software Engineering.

3. Content of the course

Discipline "IT Project Management" involves the study of the following topics:

Topic 1. Enterprise management systems

Topic 2. Fundamentals of project management and project decision-making

Topic 3. Project management areas

Modular test

Credit

4. Coursebooks and teaching resources

Basic reading:

1. *Successful Project Management: Evaluate All Your Options for Change, Put Together an Effective Project Team, Plan a Logical Course of Work, Keep Projects on Time and to Budget* (Business Partners: IMM Lifestyle Books 2009 240 p ISBN-10: 184773396.
2. *Gojko Adzic Impact Mapping: Making a big impact with software products and projects Provoking Thoughts*, 2012 86 p ISBN-10 : 0955683645, ISBN-13: 978-0955683640
3. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition and The Standard for Project Management* Project Management Institute. 250 p. ISBN-10 : 1628256648, ISBN-13 : 978-1628256642
4. *Practice Standard for Scheduling*. Project Management Institut. 2019. 100 p. ISBN-10 : 1628255617, ISBN-13 : 978-1628255614
5. *Project management Guide: Level Basis, C/B IPMA ICB4*, 2020. 92 p ISBN-10: 3751900802, ISBN-13 : 978-3751900805
6. *Project Management Competence Profiles, Certification Levels and Functions in the Project Management Field Based on ICB*. IPMA. 56 p. ISBN-10 : 9087535821, ISBN-13 : 978-9087535827

Further reading:

7. *Nathan Furr, Jeff Dyer, Clayton M. Christensen The Innovator's Method: Bringing the Lean Start-up into Your Organization* Harvard Business Review Press. 2014:288 p. ISBN-10: 9781625271464, ISBN-13: 978-1625271464
8. *Stefan F. Dieffenbacher, Caroline Hüttinger How to Create Innovation: The Ultimate Guide to Proven Strategies and Business Models to Drive Innovation and Digital Transformation: Digital Leadership AG*. 2022 -576 p.
9. *David Bourgeois, JAMES L. SMITH, SHOUHONG WANG Information Systems for Business and Beyond* 2019 -327 p. <https://opentextbook.site/exports/ISBB-2019.pdf>
10. *Thomas H. Davenport The AI Advantage: How to Put the Artificial Intelligence Revolution to Work (Management on the Cutting Edge)* The MIT Press 2018 248 p ISBN-10 0262039176
11. *Robb Wilson Age of Invisible Machines: A Practical Guide to Creating a Hyperautomated Ecosystem of Intelligent Digital Workers* :Wiley 2022 -255 page.

Educational content

5. Methods of mastering the discipline (educational component)

No	Type of training session Description	Description of the training session
<i>Topic 1. Enterprise management systems</i>		
1	<i>Lecture No1 Formation of enterprise management systems</i>	<i>Management concepts based on: structural model, functional model, based on the process model, project model. Management standards. Analysis of the effectiveness of the application.</i>

	<i>Lecture No2 Project and software enterprise</i>	<i>Software and project management models. P2M, NCB, PMBOK STANDARDS.</i>
2	<i>Computer workshop No1</i>	<i>Selection of a case for the development of a project for a computer workshop. Initial description of the project proposal</i>
<i>Topic 2. Fundamentals of project management and project decision-making</i>		
3	<i>Lecture No3. Theoretical foundations of projects</i>	<i>The history of the subject. The concept of project management. Approaches to project implementation. RMWOK Standard, NCB and Industry Project Management Standards.</i>
4	<i>Lecture No4. Project life cycle. Processes. Management areas.</i>	<i>Project life cycle. Phases of the life cycle. Project processes: initiation, planning, execution, completion. Control processes. 10 oblastei project management. RMVOK standard</i>
5	<i>Lecture No5. Formation of the project concept (part 1) Lecture No5. Formation of the project concept (part 2)</i>	<i>The project, the purpose, the product of the project, the results of the project. Strategical alternatives to the implementation of the project Principles of formation of the project concept. The structure of the concept. Technical and economic justification.</i>
6	<i>Computer workshop No2.</i>	<i>Formation of the project concept</i>
<i>Topic 3. Project management areas</i>		
7	<i>Lecture No6. Stakeholder Management</i>	<i>Identifying stakeholders. Identification of stakeholders. Stakeholder analysis. Management strategy. Communication plan.</i>
8	<i>Lecture 7. Project content management. Integration Management</i>	<i>Project Scope Management (Project Scope Management) Development of the Project Charter. Content planning. Definition of content. Compilation of SDR - distribution structures (decomposition) of works</i>
9	<i>Lecture 8. Integration Management</i>	<i>Integration management (project initiation and coordination) (Project Integration Management). Project integration management is an important part of the project. It defines the goals of the project, its boundaries, content and resources of the project. Project integration management contains in coBi.</i>
10	<i>Computer workshop No3.</i>	<i>Formation of the SDR project</i>
11	<i>Lecture No9 Time management</i>	<i>Time management (time budget) (Project Time Management). It is important to comply with all deadlines for the project. This is a very difficult task. To solve it apply. Determination of the composition of operations. Definition of the relationship of operations. Critical method method, PERT.</i>
12	<i>Lecture No10 Resource management. Project deliveries. Financial and material resources.</i>	<i>The concept of resources. Types of resources. Resource constraints. Purchase. Contract security. Resource allocation management. Formation of a resource sheet. Resource allocation between works Resource allocation. Balancing the resources and time of projects. Eliminating human resource overload.</i>

13	Lecture No11. Human resource management	Project Human Resource Management (selection, preparation, organization of work) (Project Human Resource Management). The project is implemented by the project team. Since there is a share of the unknown in the project, it is important to foresee the development of the project team and the additional involvement of experts in the subject area. Personnel management is compiled.
14	Computer workshop No4.	Definition of project resources.
15	Lecture No12 Project quality management	Project Quality Management (Project Quality Management). The quality of the project result is understood as customer satisfaction, compliance with quality criteria and compliance with the expectations of the end user. The quality of the project is planned and monitored throughout the project. These processes may involve third-party quality specialists in this field. The principles of TQM (Total Quality Management) are widely used – total quality management at all stages of the project. Quality plan.
16	Lecture No 13. Communications Management	Project Communication Management - monitoring and forecasting the progress of work and the result. Document flow of the project. Reports. Effective methods of communication. Communication plan.
17	Computer workshop No5.	Communication plan. Quality plan.
18	Lecture No 14. Risk management	Project risk is the danger of undesirable deviations from the expected states of the project in the future, on the basis of which decisions are made at the moment. Risk identification, risk analysis and risk assessment. Risk management strategy. Anti-risk action plan.
19	Lecture No 15. Project cost management.	Cost Management (financial and material budget) (Project Cost Management)
20	Computer workshop No6	Risk management. Anti-risk action plan.
21	Lecture No 16. Project change management	Changes. Change management regulations. Risks of making variables
22	Computer workshop No 7.	Value management. Cash flow. Budget. Reports
23	Lecture No 17 Project implementation and completion.	Monitoring of project implementation. Control of changes. Completion of the project. Project completion procedures. The final meeting of the project. Archiving the project.
Modular test		
Credit		

6. Self-study

Discipline "IT Project Management" is based on independent preparation for classroom classes on theoretical and practical topics.

No	The name of the topic submitted for independent study	Hours	Literature
<i>Topic 1. Enterprise management systems</i>			
1	<i>Lecture No1 Formation of enterprise management systems</i>	1	1,2,7
2	<i>Lecture No2 Project and software enterprise</i>	1	1,2,6,7
3	<i>Computer workshop No1 . Choosing a case for project development. Initial description of the project proposal</i>	3	1,2,6,7
<i>Topic 2. Fundamentals of project management and project decision-making</i>			
3	<i>Lecture No3. Theoretical foundations of project management</i>	1	1, 2 3
4	<i>Lecture No4. Project life cycle. Processes. Areas of management.</i>	1	1,3, 4, 7
5	<i>Lecture No5. Formation of the project concept (part 1)</i>	1	1,5,10, 11
	<i>Lecture No5. Formation of the project concept (part 2)</i>	1	3,4
6	<i>Computer workshop No2. Formation of the project concept</i>	3	1,2,3
<i>Topic 3. Project management areas</i>			
7	<i>Lecture No6. Stakeholder Management</i>	1	1,2,4
8	<i>Lecture 7. Project content management. Integration Management</i>	1	1,2, 9
9	<i>Lecture 8. Integration Management</i>	1	
10	<i>Computer workshop No3. Formation of the SDR project</i>	3	1,2,4,5
11	<i>Lecture No9 Time management</i>	1	4,7,9
12	<i>Lecture No10 Resource management. Project deliveries. Financial and material resources.</i>	1	1,3 8
13	<i>Lecture No11. Human resource management</i>	1	4,5,7
14	<i>Computer workshop No4. Define project resources.</i>	3	1, 4,5
15	<i>Lecture No12 Project quality management</i>	1	4, 5
16	<i>Lecture No 13. Communications Management</i>	1	3,4,11
17	<i>Computer workshop No5. Communication plan. Quality plan.</i>	3	1, 3,8,
18	<i>Lecture No 14. Risk management</i>	1	2,3,9
19	<i>Lecture No 15. Project cost management.</i>	1	4,6,7
20	<i>Computer workshop No6. Risk management. Anti-risk action plan.</i>	3	1, 2, 3,9
21	<i>Lecture No 16. Project change management</i>	1	4,5,8,7
22	<i>Computer workshop No 7. Value management. Cash flow. Budget. Reports</i>	3	2,3,8

23	Lecture No 17 Project implementation and completion of the project.	1	6,8,9
Modular test		10	1-11
Credit		17	1-11

Politics and control

Attendance of lectures is mandatory.

Attendance at computer workshop classes can be episodic and, if necessary, consultation/defense of computer workshops.

Rules of conduct in the classroom: activity, respect for those present, disconnection of phones.

Adherence to the policy of academic integrity.

Rules for the protection of computer workshops: work must be done in accordance with the tasks and in accordance with the version.

7. Types of control and rating system for evaluating learning outcomes

During the semester, students perform 7 computer workshops. The maximum number of points for each computer workshop: 10 points. The execution of all computer workshops is mandatory for obtaining a test.

Points are awarded for:

- quality of computer workshop: 0-5 points;
- answer during the protection of the computer workshop: 0-3 points;
- timely submission of work to the defense: 0-2 points.

Criteria for assessing the quality of performance:

- 5 points – the work is performed efficiently, in full;
- 4 points – the work was performed efficiently, in full, but has drawbacks;
- 3 points – the work was completed in full, but contains minor errors;
- 2 points – the work is completed in full, but contains significant errors;
- 0 points – the work is not completed in full.

Criteria for evaluating the answer:

- 3 points – the answer is complete, well-reasoned;
- 2 points – the answer is correct, but has flaws or minor errors;
- 1 point – there are significant errors in the answer;
- 0 points – no answer or the answer is incorrect.

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

- 2 points – the work is submitted to the defense 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 protection of computer workshops:
10 points × 7 comp. pract. = 70 points.

During the semester, lectures are given surveys on the topic of the current lesson. The maximum number of points for all surveys: 3 points. The number of surveys on the topic of the current lesson for one student is unlimited.

The task for a **modular test** consists of 2 theoretical and 1 practical for questions. The answer to each question is estimated at 10 points.

Criteria for evaluating each test question:

- 9-10 points – the answer is correct, complete, well-reasoned;
- 7-8 points – the answer is correct, detailed, but not very well reasoned;
- 5-6 points – in general, the answer is correct, but has drawbacks;

3-4 points – there are minor errors in the answer;
1-2 points – there are significant errors in the answer;
0 points – no answer or the answer is incorrect.

The maximum number of points for a modular test:
10 points × 3 questions = 30 points.

The rating scale for the discipline is equal to:
 $R = RC = 70 \text{ points} + 30 \text{ points} = 100 \text{ points}$.

Calendar control: it is carried out twice a semester as a monitoring of the current state of fulfillment of the requirements of the syllabus.

At the first certification (8th week), the student receives "enrolled" if his current rating is at least 1-5 points (50% of the maximum number of points that a student can receive before the first certification).

At the second certification (14th week), the student receives "enrolled" if his current rating is at least 20 points (50% of the maximum number of points that a student can receive before the second certification).

Semester control: credit

Conditions of admission to semester control:

With a semester rating (R_C) of at least 60 points and enrollment of all works of the computer workshop, the student receives a credit "automatic" in accordance with the table (Table of correspondence of rating points to grades on a university scale). Otherwise, he must perform a test paper.

A necessary condition for admission to the test work is the implementation and protection of a computer workshop.

If a student does not agree with the grade "automatic", he may try to increase his grade by writing a test paper, while his points received for the semester are preserved, and of the two marks received by the student, the best ("soft" grading system is set).

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

<i>Score</i>	<i>Score</i>
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 № 8 from 25.01.23)

Approved by the Faculty Board of Methodology (protocol № 6 from 27.01.23)

Annex 1. The list of questions that are submitted for semester control

1. What is the organizational structure of the company?
2. What types of organizational structures do you know?
3. Management concepts based on a structural model
4. Management concepts based on the process model
5. Management concepts based on the project model
6. Management concepts based on a functional model
7. Project management standards
8. Model of technological maturity
9. The concept of project, methodology management.
10. Classification of projects in the company
11. The concept of a system, a systematic approach to project management.
12. Project life cycle. Project phase characteristics
13. List and briefly describe the processes in project management.
14. Identifying stakeholders
15. Stakeholder Management
16. Knowledge management in the project.
17. Project content management
18. Project time management. Project schedule
19. Connection between project tasks.
20. Hierarchical structure of the project. SDR project
21. Modern methodologies of quality management in the project
22. Project management areas
23. Reveal the main stages of developing a project concept.
24. Project resources
25. Procurement. Contracts. Material resources
26. Project financing. Financial resources of the project
27. Resource allocation. Distribution logistics.
28. Management of problems, conflicts of the project.
29. Project team management. Organising structure of the project.
30. Project quality management. Quality standards.
31. Project communications management.
32. Project risks. Risk analysis
33. Project risks. Risk assessment
34. Project risk. Anti-risk measures
35. Change management. The procedure for making changes
36. Project monitoring. Execution control.
37. Implementation of the project
38. Completion of the project