

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ СЕМЕНА КУЗНЕЦЯ

ЗАТВЕРДЖЕНО
на засіданні кафедри
інформаційних систем.
Протокол № 1 від 27.08.2024 р.



ПОГОДЖЕНО
Проректор з навчально-методичної роботи

Каріна НЕМАШКАЛО

ТЕХНОЛОГІЇ УПРАВЛІННЯ ІТ-ПРОЄКТАМИ

робоча програма навчальної дисципліни (РПНД)

Галузь знань
Спеціальність
Освітній рівень
Освітня програма

12 "Інформаційні технології"
126 "Інформаційні системи та технології"
другий (магістерський)
"Інформаційні системи та технології"

Статус дисципліни
Мова викладання, навчання та оцінювання

вибіркова
англійська

Розробники:
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підписано КЕП

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Дмитро БОНДАРЕНКО

Гарант програми

підписано КЕП

Олександр КОЛГАТІН

Харків
2024

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY
OF ECONOMICS

APPROVED

at the meeting of the department
information systems.

Protocol № 1 of 27.08.2024



AGREED

Vice-rector for educational and methodological
work

Karina NEMASHKALO

IT PROJECT MANAGEMENT TECHNOLOGIES

program of the course

Field of knowledge
Specialty
Study cycle
Study programme

12 "Information technologies"
126 "Information systems and technologies"
second (master's)
"Information systems and technologies"

Course status

elective

Language

Englisch

Developers:

PhD, Associate professor

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Head of Information Systems
Department

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Head of study programme

digital signature

Oleksandr KOLGATIN

**Kharkiv
2024**

INTRODUCTION

In connection with the development of computer information systems and technologies and the growth of their role in the activities of enterprises and organizations in various fields, the problem of choosing management technology for software development projects (IT projects) is becoming increasingly acute.

The relevance and necessity of studying the discipline is determined both by the processes of Ukraine's integration into the world community and by the need for further development of the information society. There is an acute lack of skills in formalization, preparation and project management among professional personnel.

The practical orientation of the educational discipline "IT- project management technologies" is determined by the urgent need to master the global experience of development, analysis, implementation and project management in the field of information systems and software development.

The goal of the course "IT- project management technologies" is the acquisition of theoretical knowledge and practical skills of IT project management technologies, in particular, in the role of members of project teams in the conditions of active development of the industry in Ukraine.

The tasks of the course are:

- familiarization with the history and development trends of the modern theory of project management;
 - familiarization with the properties and types of IT projects on various grounds;
 - study of phases and processes of IT project management;
 - assimilation of SADT functional modeling methodology (IDEF0 standard) and sequential process execution methodology (IDEF3 standard);
 - familiarization with international standards (technologies) of software development;
 - mastering approaches to team management, communications, content, deadlines, risks, resources, and project cost;
 - mastering the principles and values of Agile methodology;
- assimilation of Scrum as an IS management technology for the acquisition of teamwork skills.

The subject of the course is technologies and principles of IT project management.

The object of the course is the process of managing IT projects.

The learning outcomes and competence formed by the course are defined in the table. 1.

Table 1

Learning outcomes and competencies formed by the course

Learning outcomes	Competencies
LO 03	GC04, SC02, SC08
LO 05	GC04, SC02, SC08
LO 06	SC02, SC08
LO 12	GC01, GC03, SC02, SC08

where, LO 03 Making effective decisions on the problems of information infrastructure development, creation and application of IT.

LO 05. Determining the requirements for ICT on base of business processes and needs of interested parties' analysis, to develop technical tasks.

LO 06. Justifying the choice of technical and software solutions, taking into account their interaction and potential impact on solving organizational problems, organize their implementation and use.

LO12. Improving the information system on the base of business processes analysis.

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

GC 03. Ability to communicate with representatives of other professional groups at different levels (with experts from other fields of knowledge/types of economic activity).

GC 04. Ability to develop and manage projects.

SC02. Ability to formulate requirements for life cycle stages of service-oriented information systems.

SC08. Carry out reengineering of applied information systems and business processes.

COURSE CONTENT

Content module 1 Theoretical foundations and methodological support of IT project management

Topic 1. General provisions of software development project management software. Life cycle of the project

- 1.1. The essence of project management and classification of IT projects.
- 1.2. Project implementation planning. Hierarchical work structure (WBS).
- 1.3. IT project management.
- 1.4. Phases of the life cycle of an IT project.
- 1.5. Project life cycle processes.

Topic 2. International project management standards. PMBOK Basics

- 2.1. Variety of project management standards.
- 2.2. Value Delivery System and Project Delivery Principles.
- 2.3 PMBOK portfolios, programs and projects.

Topic 3. Project management based on the MSF standard. Team and project quality management

- 3.1. MSF as a Microsoft approach to project management.

- 3.2. Structure of the MSF.
- 3.3. Management of the team and communications in the project.
- 3.4. IT project quality management.

Content module 2 Practical aspects of IT project management. Agile methodology.

Topic 4. Management of the content, terms, risks, resources and cost of the IT project

- 4.1. Project planning process and its content.
- 4.2. Estimating the duration of operations and drawing up a plan execution schedule.
- 4.3. Identification and assessment of IT project risks, development of measures, response.
- 4.4. Project resource management.
- 4.5. Cost classification and IT project cost management.

Topic 5. Agile project management methodology

- 5.1. Agile methodology: principles and values.
- 5.2. Extreme programming method in Agile methodology.
- 5.3. The Crystal method for organizing teamwork in IT projects.

Topic 6. Scrum: team and processes, meetings and artifacts

- 6.1. Scrum as an IT management methodology based on time management principles.
- 6.2. The structure of SCRUM.
- 6.3. Scrum team, main roles in the team.
- 6.4. Product Backlog and Sprint Backlog.

The list of laboratory studies in the course is given in table 2.

Table 2

The list of laboratory studies

Name of the topic and/or task	Content
Topic 1 Laboratory work 1.	Structural and calendar planning of the project. Drafting a brief for software development
Topic 2. Laboratory work 2.	Planning the IT project development process using projects.zoho.com
Topic 3 Laboratory work 3.	Defining the Vision and Scope of the project and drawing up project documentation based on MSF
Topic 4. Laboratory work 4.	Project development and management using MS Project
Topic 5 Laboratory work 5.	Development of a contract and technical task for the creation of a website as a document and information system.
Topic 6 Laboratory work 6.	Project development according to the SCRUM methodology

The list of self-studies in the course is given in table 3.

List of self-studies

Name of the topic and / or task	Content
Topic 1 - 6	Studying lecture material
Topic 1 - 6	Preparation for laboratory classes
Topic 1 - 6	Preparation for the test

The number of hours of lecture and laboratory studies and hours of self-study is given in the technological card of the course.

TEACHING METHODS

In the process of teaching an educational discipline, in order to acquire certain learning outcomes, to activate the educational process, it is envisaged to use such teaching methods as:

Verbal (lecture (Topic 1-4, 6), problematic lecture (Topic 5)).

In person (demonstration (Topic 1-6)).

Laboratory work (Topic 1 - 6), case method (Topic 1 - 6).

FORMS AND METHODS OF ASSESSMENT

The university uses a 100-point accumulative system for evaluating the learning outcomes of higher education applicants.

Current control is carried out during lectures, practical, laboratory and seminar classes and is aimed at checking the level of readiness of the student to perform a specific job and is evaluated by the amount of points scored:

– for courses with a form of semester control as grading: maximum amount is 100 points; minimum amount required is 60points.

The final control includes current control and an exam.

Semester control is carried out in the form of a semester exam or grading.

The final grade in the course is determined:

– for disciplines with a form of exam, the final grade is the amount of all points received during the current control and the exam grade.

During the teaching of the course, the following control measures are used:

Current control: protection of laboratory works (54 points), current control works (6 points).

Semester control: Grading including Exam (40 points).

More detailed information on the assessment system is provided in technological card of the course.

An example of an exam card and assessment criteria.

An example of an examination ticket

Ministry of education and science of Ukraine
Simon Kuznets Kharkiv National University of Economics
The second (master's) degree of higher education
Specialty "Information systems and technologies"
program of the course "Information systems and technologies"
Semester 2 Study programme "IT project management technologies"

EXAMINATION TICKET No. 1

I. Stereotype (test) task, table 4.

Table 4

1	General characteristics of the projects 1) focus on achieving specific goals. 2) limited duration. 3) inimitability and uniqueness. 4) all answers are correct.
2	By duration, IT projects are divided into 1) simple, medium and complex. 2) short-term, medium-term and long-term. 3) small, medium, large. 4) large, significant, very significant.
3	The sequence of phases of the project necessary to achieve certain goals from the moment of formation of the project concept to its completion, including the processes of implementation and use of this 1) IT project phases. 2) project life cycle.
4	The main works necessary to achieve the project's goals are carried out in stages 1) conceptual phase. 2) development phase. 3) implementation phase. 4) completion phase.
5	What are the goals of interaction with project stakeholders 1) blocking of interested parties holding back the project. 2) satisfaction of all expectations of interested parties. 3) minimization of resistance to project implementation. 4) minimization of project support.
6	A working product is more important than comprehensive documentation in 1) Agile methodologies. 2) Waterfall methodology.
7	What model of the life cycle should be used when creating simple information systems 1) iterative. 2) spiral. 3) incremental. 4) cascade.
8	Initiation, development, execution, control, completion - that's it

	<ol style="list-style-type: none"> 1) subjects of IT project management. 2) objects of IT project management. 3) IT project management processes. 4) IT project management methods.
9	<p>What are the types of organizational structures?</p> <ol style="list-style-type: none"> 1) the customer is the contractor; 2) functional, matrix, project; 3) the manager is a single group of project participants; 4) manager - various groups of project participants.
10	<p>The MSF life cycle model combines</p> <ol style="list-style-type: none"> 1) the flexibility of the cascade model and the simplicity of the spiral. 2) ease of management of the cascade model with the flexibility of the spiral model. 3) the advantages of extreme programming and the simplicity of the spiral model. 4) limitations of extreme programming and simplicity of the spiral model.
11	<p>The main phases of the MSF model are:</p> <ol style="list-style-type: none"> 1) creating a general picture of applications (Envisioning) and planning (Planning). 2) development (Developing). 3) stabilization (Stabilizing) and deployment (Deploying). 4) all answers are correct.
12	<p>Assessment of the existing situation, determination of team composition, project structure, business goals, requirements and user profiles; development of the solution concept and risk assessment according to the MSF standard is in progress</p> <ol style="list-style-type: none"> 1) creating a general picture of applications (Envisioning). 2) planning (Planning). 3) development (Developing). 4) stabilization (Stabilizing).
13	<p>Triangle of priorities according to the MSF standard</p> <ol style="list-style-type: none"> 1) resources, time, opportunities. 2) staff, product, project. 3) requirements, functions, architecture. 4) code, architecture, requirements.
14	<p>The main principle of the project group is the MSF standard</p> <ol style="list-style-type: none"> 1) fairly distribute tasks between performers. 2) to understand the specifics of the customer's business. 3) to develop modern technical documentation in a timely manner. 4) release the right product at the right time.
15	<p>A system of methods and types of activities aimed at fulfilling the requirements and expectations of the customer and consumers of the project product regarding the quality of the project itself and its products is</p> <ol style="list-style-type: none"> 1) management of project deadlines. 2) project team management. 3) project planning management. 4) project quality management.
16	<p>The process that involves determining the goals and parameters of interaction between works and project participants, resource allocation, and selection and decision-making to achieve the project goals is</p> <ol style="list-style-type: none"> 1) IT project planning process 2) IT project management process. 3) team building process. 4) risk management process.

17	<p>The development of one of the functions of the software product being created for subjective reasons required more costs than the expert had previously estimated - this is a risk associated with</p> <ol style="list-style-type: none"> 1) sometimes. 2) budget 3) technology 4) quality
18	<p>Determining what resources and in what quantity will be used in the project works is</p> <ol style="list-style-type: none"> 1) resource planning. 2) assessment of the need for resources. 3) drawing up a table of resource needs for works. 4) compilation of the resource availability table.
19	<p>Violation of the terms of contracts for the supply of project product components is a risk associated with</p> <ol style="list-style-type: none"> 1) the market. 2) scientific and technological progress. 3) counterparties. 4) sometimes.
20	<p>Investment and current expenses are distinguished according to the following criteria:</p> <ol style="list-style-type: none"> 1) the degree of influence of the volume of production on the level of costs. 2) at the place of work. 3) by methods of inclusion in the cost of project works. 4) on the basis of the relation to the cost of works.
21	<p>What is the key advantage of Agile compared to the waterfall approach (Waterfall)</p> <ol style="list-style-type: none"> 1) in Agile, everyone works as a single team and therefore there are fewer communication problems. 2) in Agile, the cost of development is reduced due to increased efficiency. 3) agile allows you to reduce the cost of errors that inevitably occur in complex environments. 4) Agile has less idle resources.
22	<p>What is the sprint backlog</p> <ol style="list-style-type: none"> 1) a board with three columns - To Do, In Work, Done - and with task cards placed on it. 2) a list of tasks that developers need to complete in order to implement a product increment. 3) the sprint goal, the set of product backlog items selected for implementation within the sprint, and the plan for their implementation in the product increment. 4) a list of prerequisites for sprint execution.
23	<p>A methodology that involves product development as a flow that successively goes through the phases of requirements analysis, design, implementation, testing, integration and support</p> <ol style="list-style-type: none"> 1) cascade development methodology. 2) flexible development methodology.
24	<p>What is the key advantage of Agile compared to the waterfall approach (Waterfall)</p> <ol style="list-style-type: none"> 1) in Agile, everyone works as a team and therefore there are fewer communication problems. 2) in Agile, the cost of development is reduced due to increased productivity. 3) Agile allows you to reduce the cost of errors that inevitably occur in complex environments. 4) in Agile there is less downtime of resources.
25	<p>And why is Scrum intended?</p> <ol style="list-style-type: none"> 1) increase the efficiency of product management and improve development practices. 2) establish strict rules on the project that everyone must follow.
26	<p>What is the recommended number of team members for a Scrum team</p>

	<ol style="list-style-type: none"> 1) 2-4. 2) 3-9. 3) 10-15. 4) 20-50.
27	<p>What duties are included in the role of a Scrum Master</p> <ol style="list-style-type: none"> 1) explain Scrum values and practices to team members and monitor their adherence. 2) perform the duties of the technical team leader. 3) to be a representative of the development team at meetings with the Product Owner.
28	<p>Which role does not exist in the Scrum methodology</p> <ol style="list-style-type: none"> 1) product owner 2) Scrum master. 3) project manager. 4) the tester

II. Heuristic tasks

How a PM will plan a software product development project, namely a CRM system, using Zoho.

1. Familiarity with business

1.1. Collection of information about the industry, target market and business processes of the customer enterprise - 5 days.

1.2 Conducting interviews with future users of the system: managers, marketers and sales managers - 2 days.

1.3. The brief has been drawn up.

3. Designing and setting tasks

2.1. Analysis of the data obtained at the first stage – 3 days.

2.2. Identifying business problems and finding ways to solve them - 4 days.

2.3. Compiling a list of priority tasks - 3 days.

2.4. The terms of reference have been approved, the project team has been appointed.

3. Prototype and design creation

3.1. Creation of mockups of the CRM interface and presentation to the customer - 6 days.

3.2. Adjustment of the prototype according to wishes - 1 day.

3.3. The final version of the design has been approved.

4. Development and testing

4.1. Development of the server part of the project - 15 days.

4.2. Development of the client part of the project - 15 days.

4.3. Testing is 7 days.

4.4. The software is developed.

5. Implementation of CRM in business processes

5.1. Transferring the CRM system to the customer's working hosting or equipment - 2 days.

5.2. Synchronization with other enterprise programs - 1 day.

5.3. Connecting mail, IP telephony and other communication channels to the system - 1 day.

5.4. Staff training – 3 days.

5.5. The act of commissioning has been signed.

III. Heuristic tasks

1. Build a Gantt chart.

2. Define the critical path.

3. Sequentially change the status of project tasks.

4. Get the diagram-report of the project.

Approved at a meeting of the Department of Information Systems. Protocol No. _____ of "___" _____ 20___ year.

Examiner, Ph.D., Associate professor Yuiia CHYRVA

Head of Department, Ph.D., Associate professor Oleksandr BONDARENKO

Evaluation criteria

Each exam ticket for the IT Project Management exam contains three tasks:

I. Stereotype (test).

II. Heuristic.

III. Heuristic.

The final grade for the exam tasks is the sum of the marks for each task.

The stereotype task is devoted to the solution of a logical-theoretical task according to the main definitions and provisions of the educational discipline. The main goal is to organize the terminological apparatus of the educational discipline according to the materials of the lecture part of the discipline. The form of conducting is test tasks. Each test contains 28 questions. Each question has only one answer option.

The correct answer to each test question is estimated at 0.25 points. The total number of points for the first task is defined as the sum of points for the answers to the test questions and can range from 0 to 14 points.

The second and third heuristic tasks are practical tasks aimed at solving typical professional tasks of an IT project management specialist and allow diagnosing the level of training and competence of the applicant in the academic discipline.

The evaluation criteria for the second and third tasks of the exam ticket are as follows:

13 points – for a completely correctly completed task;

10 - 12 points - for a task performed with minor and insignificant errors (for each inaccuracy, the score is reduced by 1 point);

7 - 9 points - if the task is performed correctly in general, but not completely;

1 – 6 points – for a task performed with significant errors (for each error, the grade is reduced by 1 point);

0 points - the task was not completed at all.

RECOMMENDED LITERATURE

Main

1. Williams, Ryan. Project Management Toolkit: Essential Resources for Beginners (free e-book) version 1.2. 10.31237/osf.io/4n3gb. - (2023), Режим доступу :https://www.researchgate.net/publication/370765907_Project_Management_Toolkit_Essential_Resources_for_Beginners_free_e-book_version_12

2. Kathy Schwalbe. Information Technology Project Management, Ninth Edition, ISBN-13: 978-1-337-10135-6, Library of Congress Control Number: 2018944898. Режим доступу :

[https://unidel.edu.ng/focelibrary/books/Information%20Technology%20Project%20Management%20by%20Kathy%20Schwalbe%20\(z-lib.org\).pdf](https://unidel.edu.ng/focelibrary/books/Information%20Technology%20Project%20Management%20by%20Kathy%20Schwalbe%20(z-lib.org).pdf)

3. Чирва Ю. Є. Види та класифікація договорів у сфері інформаційних технологій [Електронний ресурс] / Ю.Є. Чирва, Д.І. Євстрат // Вісник

Харківського національного автомобільно-дорожнього університету. – 2022, № 96. – С. 100-106. – Режим доступу : <http://repository.hneu.edu.ua/handle/123456789/27384>

4. Самойленко В. В. Удосконалення управління проектною діяльністю на підприємстві. [Електронне видання] / В. В. Самойленко // Ефективна економіка. - 2022. - № 11. Режим доступу : <http://repository.hneu.edu.ua/handle/123456789/28270>

5. Jack T. Marchewka. Information Technology Project Management - Leyh Publishing LLC and printed and bound by R.R. Donnelley & Sons, Northern Illinois University, 2018. – Режим доступу: <https://ugcollege.ge/storage/books/June2021/rDuZFLMTq8TPMzG8ebzi.pdf>

6. Козлова І. М. Теоретичні аспекти управління проектами в діяльності підприємства [Електронний ресурс] / І. М. Козлова // Регіональна економіка та управління. – Запоріжжя : Видавничий дім «Гельветика», 2020. – 2 (28) травень. – С. 63–70. Режим доступу : <http://repository.hneu.edu.ua/handle/123456789/23643>

Additional

7. A guide to the project management body of knowledge (PMBOK Guide) – Seventh Edition An American National Standard. – ANSI/PMI 99-001-2021.

8. Моделювання бізнес-процесів та управління ІТ-проектами : навчальний посібник / Є. М. Крижановський, А.Р. Яцолт, С.О. Жуков, О. М. Козачко – Вінниця : ВНТУ, 2018. – 91 с.

9. Основи управління ІТ проектами : навч. посіб. для студ. спеціальності 122 «Комп'ютерні науки»/ КПП ім. Ігоря Сікорського ; уклад.: В. О. Кузьмініх, Р. А. Тараненко. – Київ : КПП ім. Ігоря Сікорського, 2019. – 75 с.

10. Kirsi Hyttinen Project management handbook. – Laurea, 2017. – 69 p.

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11. Лекції з дисципліни «Управління ІТ-проектами» [Електронний ресурс] – Х.: ХНЕУ, 2019. – 83 с. Режим доступу : <https://pns.hneu.edu.ua/course/view.php?id=8546>.

12. Project management [Electronic resource]. – URL : https://www.opentextbooks.org.hk/system/files/export/15/15694/pdf/Project_Management_15694.pdf