

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

**УПРАВЛІННЯ ТА МЕНЕДЖМЕНТ ЯКОСТІ БІЗНЕС-ПРОЦЕСІВ ІТ-  
ПІДПРИЄМСТВ**

**робоча програма навчальної дисципліни (РПНД)**

Галузь знань	12 "Інформаційні технології"
Спеціальність	126 "Інформаційні системи та технології"
Освітній рівень	другий (магістерський)
Освітня програма	"Інформаційні системи та технології"

Статус дисципліни	обов'язкова
Мова викладання, навчання та оцінювання	англійська

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# INTRODUCTION

The management and quality management of business processes of IT companies is based on the implementation of a process approach to the management of IT organizations, as well as on the formalization, optimization and reengineering of business processes. The course examines the basic principles of quality management of business processes and quality management systems. Special attention is paid to documentation based on the quality management system, as well as analysis of process cost models. A significant emphasis is placed on the study of methods of implementing the quality management system in IT organizations.

Purpose of the course: to develop the competences of applicants in developing business process models for various subject areas, studying the theory and practice of modeling and analyzing business processes based on the application of modern modeling and design methods and tools, building business process quality metrics.

**The object** of the educational course is the processes of forming a quality management system for business processes of IT enterprises, methods of its implementation.

**Subject of course:** methodologies and modern technologies for managing business processes of IT enterprises

**Objective of the course:**

1. Acquaint applicants with the basic concepts of business process management of IT companies, principles and methods of business process organization.
  2. Learn models and tools for business process simulation and decision making.
  3. Consider the key elements of the information system for managing business processes of IT companies.
  4. Use various approaches to organize the quality management system in IT companies.
- The learning outcomes and competences that the course forms are defined in table 1.

Table 1

**Learning outcomes and competencies formed by the course**

<b>Learning Outcomes</b>	<b>Competencies</b>
LO01	SC08
LO02	GC03
LO03	GC04, GC05, SC02, SC08
LO04	GC03, GC04,GC05,SC01,SC02,SC07
LO05	GC03,GC04, GC05,SC02,SC08
LO06	GC04,GC05,SC07,SC08
LO07	GC04, GC05
LO10	GC05

LO11	SC07
LO12	GC03,GC05, SC02,SC08

LO01. Searching for necessary information in scientific and technical literature, databases, other sources, analyse and evaluate this information.

LO02. Communicating freely in national and foreign languages in scientific, industrial and social spheres of activity.

LO03. Making effective decisions on the problems of information infrastructure development, creation and application of IT.

LO04. Managing ICT development, implementation and operation processes that are complex, unpredictable and require new strategic and team approaches.

LO05. Determining the requirements for ICT on base of business processes and needs of interested parties' analysis, to develop technical tasks.

LO06. 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.

LO07. Making a grounded choice of project solutions and design a service-oriented information architecture of the enterprise (institution, organisation, etc.).

LO10. Providing high-quality cyber protection of ICT, to plan, organize, implement and monitor the functioning of information protection systems.

LO11. Solving the problems of digital transformation in new or unknown environments based on specialised conceptual knowledge, including modern scientific achievements in the field of information technology, researches and integration of knowledge from various fields.

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

GC03. Ability to communicate with representatives of other professional groups at different levels (with experts from other fields of knowledge/types of economic activity).

GC04. Ability to develop and manage projects.

GC05. Ability to evaluate and provide the quality of the work performed.

SC01. Ability to develop and apply IST necessary for solving strategic and current tasks.

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

SC07. Develop and implement innovative projects in the field of ICT.

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

## **COURSE CONTENT**

### **Content module 1. Basics of the process approach**

### **Topic 1. Process approach in IT organization management. Formalization of business processes**

Introduction to the discipline. The purpose and tasks of the discipline, its place in the educational process. The structure of the discipline, recommendations for its study. Organizational methodical support of the discipline. Basic concepts of the process approach. Basics of business process management of IT enterprises. Explanation of the principles of business process management at IT enterprises. Overview of modern information technologies that support the formalization and management of business processes. Practical examples of the implementation of the process approach in real IT organizations.

### **Topic 2. Optimization and reengineering of business processes**

Definition and essence of business process optimization. Basic methods and tools for improving processes at IT enterprises. Consideration of reengineering as a radical approach to restructuring business processes. Stages and principles of reengineering in IT organizations. Examples of successful implementation of optimization and reengineering projects in the field of information technologies.

### **Topic 3. General provisions of quality management of business processes**

Overview of the main aspects of quality management of business processes at IT enterprises. Definition and role of quality management in ensuring efficiency and effectiveness of business processes. Basic methods and tools of quality control. CMMI (Capability Maturity Model Integration). Six Sigma. Lean. ITIL (Information Technology Infrastructure Library). Impact of process quality management on productivity and competitiveness of IT organizations.

### **Content module 2. Construction of IS architectural solutions**

#### **Topic 4. ISO 9001 quality management system**

The main provisions of the ISO 9001 standard as the basis of the quality management system at enterprises. Requirements of the ISO 9001 standard for the organization of business processes and quality management. The structure of the quality management system, focused on meeting the needs of customers. Benefits of implementing ISO 9001 in IT organizations and its impact on business performance.

#### **Topic 5. Documentation in the quality management system**



Consideration of the main principles and requirements for documentation within the framework of the quality management system. Types and forms of documentation necessary for the implementation and maintenance of the quality management system at IT enterprises. The role of documentation in ensuring transparency of business processes and compliance with quality standards. Examples of templates and forms of documents used in IT organizations.

**Topic 6. System of metrics. Process cost model. Implementation of the quality management system in the IT organization**

Monitoring of business processes. System of metrics. Development of BSC (Balanced Scorecard). Review of cost models for business processes, their impact on the effectiveness of quality management. Methods of estimating and managing costs for processes in IT organizations. Implementation of the quality management system in IT companies: stages, challenges and key successes. Practical recommendations on the integration of the quality management system into the existing processes of IT enterprises.

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

**Table 2**

**The list of laboratory studies**

<b>Name of the topic and/or task</b>	<b>Content</b>
Topic 1. Lab 1	Formalization of business processes
Topic 2. Lab 2	Building an Arena simulation model for end-to-end business processes
Topic 3. Lab 3	Using the Arena toolkit to document simulation results
Topic 4. Laboratory work 4	Development of simulation projects of complex business processes
Topic 5. Lab 5	Development of a system of indicators for managing business processes and their quality
Topic 6. Laboratory work 6	Analysis of business processes of an IT company

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

Table 3

### List of self-studies

Name of the topic and/or task	Content
Topic 1: Task 1.	Researching modern strategies for building data infrastructure
Topic 2. Task 2.	Analysis of AWS data storage and processing services
Topic 3. Task 3.	Research of modern BI tools
Topic 4. Task 4.	Analysing the features of ETL and ELT pipelines
Topic 5. Task 5.	ROLAP and MOLAP studies
Topic 6. Task 6.	Exploring Google Cloud Platform services

The number of hours of lectures, practical (seminar) studies and hours of self-study is given in the technological card of the course.

## TEACHING METHODS

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

Problem lecture (Topics 1-5), mini-lecture and discussion (Topics 6).

Visual (demonstration (Topics 1-6)).

Individual laboratory work (Topics 1 - 6)

## FORMS AND METHODS OF ASSESSMENT

The University uses a 100-point cumulative system for assessing the learning outcomes of students.

**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 60 points.

**The final control** includes current control and assessment of the student .

**The final grade in the course** is determined:

– for courses with a form of grading, the final grade is the amount of all points received during the current control.

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

Current control: proving the laboratory work (70 points); current assessment (30 points).

Semester control: Grading.

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

## **RECOMMENDED LITERATURE**

### **MAIN**

1. Shemaeva L.H. Management of the quality of business processes at the enterprise: [monograph /L.G. Shemaeva, K.S. Bezgin and others]; Kharkiv National Economic University - Kharkiv: Ed. Khneu, 2011. – 240 p.
2. Koyuda V. O. Business processes of a modern industrial enterprise / V. O. Koyuda, M. I. Pasko // Business Inform. – 2018. - No. - P. 302-311  
<http://repository.hneu.edu.ua/handle/123456789/18720>
3. Netepchuk V.V., Management of business processes: Study guide. - Rivne: NUVHP, 2014. - 158 p
4. Information systems and technologies: monograph / by General. ed. V. S. Ponomarenko. - Kh.: FOP Brovin O.V., 2019. - 212p.  
<http://repository.hneu.edu.ua/handle/123456789/21743>

### **Additional**

1. Arena simulation modeling system [Electronic resource]. – Access mode:  
[https://stud.com.ua/174098/tehnika/sistema\\_imitatsiyynogo\\_modelyuvannya\\_arena#google\\_vignette](https://stud.com.ua/174098/tehnika/sistema_imitatsiyynogo_modelyuvannya_arena#google_vignette)

### **Information resources**

1. Information management [Electronic resource]. -Access mode:  
<http://stringer.in.ua/?p=308>
2. Arena documentation [Electronic resource]. – Access mode:  
<https://www.rockwellautomation.com/es-mx/products/software/arena-simulation.html>
3. The site of personal educational systems of the S. Kuznets National University of Technology. Discipline "MANAGEMENT AND QUALITY MANAGEMENT OF BUSINESS PROCESSES" – Access mode:  
<https://pns.hneu.edu.ua/course/view.php?id=3933>