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

«ЗАТВЕРДЖУЮ»

Проректор з навчально-методичної роботи

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Каріна НЕМАШКАЛО

ІНФОРМАТИКА

робоча програма навчальної дисципліни

Галузь знань	**07 Управління та адміністрування**
Спеціальність	**073 Менеджмент**
Освітній рівень	**перший (бакалаврський)**
Освітня програма	**Бізнес-адміністрування**

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

Завідувач кафедри
інформатики та комп'ютерної техніки

Сергій УДОВЕНКО

Харків
2021

INFORMATICS

Syllabus of the educational discipline

Field of study	***07 Management and administration***
Specialty	***073 Management***
Education level	***first (bachelor)***
Education program	***Business-administration***

Course status	***compulsory***
Language	***English***

Kharkiv
2021

APPROVED

By the Department of Informatics and Computer Engineering meeting
Protocol № 1 dated on August 27, 2021р.

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Renewal and reapproval list of the syllabus of educational discipline

Academic year	Date of the Department meeting	Protocol №	Signature of the Department Head

<center>**Annotation**</center>

Information is of exceptional importance for any organizational, economic and social object in a market economics, because any activity of this object is based on knowledge of a specific situation, which consists in the market of goods, services, labor, means of production, money, etc., and in the enterprise itself. One of the characteristics of modern specialists in economics is the ability to use information technology in solving a wide range of economic problems. Modern information systems are not only models of certain objects of management, but also allow to systematically provide all the objectively necessary reliable information for managers and specialists of different levels in automatic or automated mode, such as the system of objective management information. Therefore, computer science is objectively inherent in the management process and is a necessary element of it.

The "Informatics" discipline is a compulsory subject and is studied in accordance to the curriculum for the learning of specialists of a bachelor's degree in the specialty of "Management" of "Business-administration" educational program. The curriculum includes learning in the form of lectures, laboratory classes and independent (home) work of students. Laboratory classes, individual work and consultations are performed with the use of personal computers, local networks and the Internet in the computer classes of S. Kuznets KNUE for the practical mastering of the main topics of the discipline. All types of classes are provided with the necessary electronic teaching materials. In order to increase the learning effectiveness, students have the opportunity to use S. Kuznets KNUE personal education system webpage.

The goal of learning the discipline is to form a system of competencies on the architectural principles of construction and operation of personal computers and computer networks, algorithmization and organization of computational processes, software, as well as the acquisition of competence with modern computer technology and effective use of modern technologies in professional activities to solve various economic and management problems for future professionals.

The task of learning the discipline is the theoretical and practical training of future professionals in the use of modern information technology in the field of management of all forms of education.

The object of the discipline is the use of information systems and technologies in economics.

The subject of the discipline is the technology of using software to solve economic problems.

<center>**Description of the course**</center>

Year of study	1
Semester	1
ECTS credits	4
Final control	pass

<center>**Structural-logical scheme of the course:**</center>

Prerequisites	Postrequisites
-	All courses

Competencies and course learning results

Competencies	Learning results
3K8 Skills in the use of information and communication technologies	PH2. Preserve moral, cultural, scientific values and increase the achievements of society, use different types and forms of physical activity to lead a healthy lifestyle.
3K8 Skills in the use of information and communication technologies	PH3. Demonstrate knowledge of theories, methods and functions of management, modern concepts of leadership.

Course program

Content module 1. Using MS Office to solve economic problems

Topic 1. Theoretical foundations of economic informatics

1.1 Information and its properties.

Information, data and knowledge. Forms of information presentation, measurements and quality of information. Information classification and encoding systems. The concept of economic information. The concept of data. Basic data structures. Information environment, information procedures, information process. Features of obtaining, processing, analysis and use of economic information.

1.2. Technical base of modern information technologies.

Basic concepts, composition, structure of information systems software: system and application software and programming tools. Evolution of system software development and programming tools, their comparative characteristics. Classification of information systems.

Topic 2. Technologies for creating and editing text documents

2.1. Creating and editing documents in MS Word.

The ways to input the text of the document, text formatting. Saving and closing documents, updating documents. Document page layout, page numbering and header/footer editing. Creating a document structure, organizing automatic formatting of the document content, adding hyperlinks to the document. Spell check. Editing a document using the search and replace mechanism, making notes in the document. Entering the password in the document.

2.2. Working with graphic objects in MS Word.

Creation of the figures and inscriptions in documents, library of drawings. Creating and editing formulas. Creating and editing tables in MS Word. Formatting tables, editing table cells, inserting formulas into a table.

2.3. Search for information in the Internet.

Types of information and evaluation of information. Search engines and their classification. Search for documents and files with different extensions. Search for the software. Search for legislation. Job search and vacancies. Search for organizations and information about people. Creating information retrieval reports and their formatting.

Topic 3. Using a spreadsheet to solve economic problems

3.1. Use of MS Excel functions in calculations.

Creating spreadsheets. Data types in MS Excel. Formatting data in spreadsheets. Organization of calculations in MS Excel. Absolute and relative references. Using cell names and ranges in formulas. Application of the function wizard for economic calculations and processing of text arrays. Working with spreadsheet data. Multi-table information processing.

3.2. Analysis of tabular data using MS Excel.

Data processing technology in the spreadsheets using built-in operators and functions. Organizing and search for data in lists. Using of forms to enter and edit lists. Using filters and sorting to analyze data. Functions of processing tables as data lists, rules of their use. Construction of summary tables. Application of intermediate results and sections for data

analysis. Data consolidation. Conditional formatting of spreadsheets. Data analysis and forecasting by graphical means of a spreadsheet processor.

Content module 2. Web-design basics

Topic 4. Network technologies

4.1. Computer networks.

General information about computer networks and their classification. Topology and methods of access in computer networks. Basics of work in a local area network: entrance and exit from a network, identification of computers, the network interface. Principles and features of resource sharing in local computer networks. Technology of resource allocation and sharing on LAN workstations. Integrity and protection of information in local computer networks, types of access to network resources and their installation.

4.2. The global computer network is the Internet.

General characteristics and stages of development of the Internet. Concepts of building the Internet. TCP / IP protocols. IP addressing. Domain Name System (DNS). Network service protocols. Unified Resource Index (URL). Basics of working on the global Internet.

Topic 5. Organization of computer security and information security

5.1. Informational security.

The main directions and purpose of information protection: confidentiality of information, integrity of information and related processes, access to information. General information and computer security measures: user identification, authorization procedures, protection of files and electronic documents, etc. Using of firewalls. Method of "digital signatures". Protection of information by encryption.

5.2. Information protection systems.

Integrated e-business security systems. Computer viruses and protection methods. Antivirus programs. Computer piracy and methods of preventing it. Using firewalls while working on the Internet. Methods of encrypting information.

Topic 6. Web-design basics

6.1. The essence and social aspects of Web-design.

General information about Web-technologies. E-mail, mailing lists and means of business communication, postal services. Network news.

6.2. Web-pages creation.

Tools and methods for web-pages building. Creating web-pages with HTML. Editing of web-pages using basic HTML elements. Formatting a web-documents using CSS. Layout of the web site. Block and adaptive layout of sites. Using GIU programs for web-pages and web-sites creation. Publishing of web sites i the Internet. Static and dynamic web sites. Dynamic design of web-pages with the help of animation effects.

Content module 3. Design and usage of databases and data warehouses in the economics

Topic 7. Software tools for working with databases and data warehouses

7.1. The definition of the database.

Database (DB) concept. Architecture of database management systems (DBMS). DBMS functionality. Data models. Subject area. Database architecture. The concept of the database schema, SPARS standard. Stages of database design.

7.2. Relational database.

Logical and physical independence from the data in the database. The main objects of the database and their characteristics. Relational algebra and relational calculus. Normalization of relations. Anomalies of data processing. Normal forms. Stages of relational database design. Database planning. Analysis of database requirements. Conceptual, logical and physical design.

Entity-relation data model. Entities, attributes, types of relationships between entities and their characteristics. Simplification of the conceptual model. Conversion of ER-diagrams into relational structures. Database design automation tools. CASE technology. Verification of normalization, integrity and user transactions.

7.3. Construction of relational database objects.

Structured query language (SQL). Purpose, general characteristics, features of use and technology of creation of SQL-queries.

Software tools for the creation of user interfaces. Form as the main object of entering and viewing database data in the user interface. Publication of information using reports.

7.4. Data warehouses.

Software for the creation of data warehouses. "Star" and "Snowflake" data warehouses. Basic operations when working with multidimensional models of data warehouses. Request processing software for retrieving information from the data warehouse.

Technology of integrated processing and collective access to information resources in the office software package. OLAP data analysis technology. Technology of using MS QUERY data source integration programs.

Topic 8. Prospects for the development of information technology.

Development of technologies for integration of heterogeneous information resources. OLAP-systems of complex data analysis, including hidden development trends. Intelligent data analysis systems. Integration of databases, web-technologies and text systems technologies. Development of object-oriented databases, geographic information, temporal and multimedia information systems. Development of deductive databases based on a combination of expert systems and databases. Development of user application development technologies. Distributed information processing technologies and software for cloud computing.

Learning and teaching methods

The following methods are used during classes types classes defined by the plan:

- presentation of educational lecture material on topics 1-7: verbal (conversation, explanation, story, instruction) with the use of visual material (presentations);

- completing of laboratory works on topics 2-8: explanations, instruction, work in small groups, discussions, debates; also the preparation for presentations by students on individual tasks in topic 8 is planned.

Learning results estimation

The system of evaluation of formed competencies for students takes into account the types of classes, which according to the curriculum of the discipline include lectures and laboratory classes, as well as independent work. Assessment of the formed competencies of students is performed according to the accumulative 100-point system. Control tools in S.Kuznets KNUE include current, modular and final types of control.

Current control is performed during the semester in lectures and laboratory classes and is estimated by the sum of points scored.

The control of students 'mastering of the educational material at the lecture is carried out by concentrating the students' attention by asking questions on the previously studied material related to the subject of the lecture.

Assessment of laboratory work includes the evaluation of active work in the classroom and assessment of the defending of laboratory work in accordance with the plan of the discipline, the total number of points - 51.

Independent (home) work of students includes analysis of literature on the subject, homework, preparation for testing, tests, presentations and defense of laboratory work. The independent work of students based on the results of thematic individual homework and preparation and presentation is presented by the total number of points for these types of work and is 14 and 5 points, respectively.

Test control is performed using a computer in the distance learning system in automatic mode. The tests consist of 15 - 20 questions and are limited in time. The student has only one attempt to complete the test tasks. The maximum score for the test tasks by modules is 6 points.

Modular control is evaluated with taking into account the current control for the relevant content module and aims at an integrated assessment of student learning achievements after studying the material from the logically complete part of the discipline - the content module.

The grade for intermediate test and control tasks is set after the end of the calendar period allotted for the task in accordance with the current content module. Assessment and conduct of tests is performed using a distance learning system, tests for each thematic module includes theoretical and practical tasks and the total number of points for tests on content modules is 24 points.

The **final control** is performed in the form of a semester credit. The credit is set as the total quantity of points scored on the results of current and modular control. The maximum is 100 points; the minimum quantity that allows student to get credit is 60 points. The total result in points for the semester is evaluated in the ECTS scale (table 1). In case the student receives less than 60 points, the dean of the faculty appoints a commission consisting of three teachers headed by the head of the department and determines the term of re-examination. In case of failure to pass the course, the dean of the faculty offers the student to re-study the discipline during the next academic period independently.

Table 1

Learning scale: national and ECTS

Total points	ECTS mark	National mark	
		For the exam, coursework, practics	For the credit
90 – 100	A	excellent	passed
82 – 89	B	good	passed
74 – 81	C	good	passed
64 – 73	D	satisfactory	passed
60 – 63	E	satisfactory	passed
35 – 59	FX	failed	failed

The final grade for the discipline is calculated taking into account the points obtained during the current control of the accumulative system, the forms of assessment and distribution of points are given in the table "Rating plan of the discipline" (Table 2):

Table 2

Rating plan of the discipline

Topic	Learning form and type		Assessment form	Max points
Topic 1,2,3	*Work in classes*			
Topic 1,2,3	Lecture	Lecture 1. Theoretical foundations of computer science. Using a spreadsheet to analyze data	Work in classes	-
Topic 2	Laboratory classes	Laboratory work 1. Creating and editing documents in MS Word	Laboratory tasks (defending)	6

		Independent work		
	Questions to process as independent work	Performing practical tasks on searching for information in the Internet and text formatting	Homework	10
Topic 3		*Work in classes*		
	Lecture	Lecture 2. Analysis of tabular data using MS Excel	Work in classes	-
	Laboratory classes	Laboratory work 2. Use of MS Excel functions in calculations	Laboratory tasks (defending)	5
		Independent work		
	Questions to process as independent work	Execution of an individual task on inter-table information processing		
		Work in classes		
	Laboratory classes	Laboratory work 3. Analysis of tabular using MS Excel	Laboratory tasks (defending)	10
	Laboratory classes	Laboratory work 4. Work with data lists in MS Excel	Laboratory tasks (defending)	10
		Independent work		
	Questions to process as independent work	Working on an individual task for the analysis of tabular data. Preparation to the control work	Control work	8
			Testing	2
Topic		*Work in classes*		
	Lecture	Lecture 3. Basics of Web-design	Work in classes	-
Topic 6	Laboratory classes	Laboratory work 5. Creation and formatting of Web-documents using HTML	Work in classes	-
		Independent work		
	Questions to process as independent work	Performing an individual task to create a Web-page in HTML		
		Work in classes		
	Laboratory classes	Laboratory work 6. Using CSS to format Web-documents	Hosting	4
			Laboratory tasks (defending)	10
			Control work	8
		Independent work		

	Questions to process as independent work	Performing an individual task to create a site. Website hosting	Testing	2
Topic 7	*Work in classes*			
	Lecture	Lecture 4. Construction of relational database objects	Work in classes	-
	Laboratory classes	Laboratory work 7. Creating a database	Work in classes	-
	Independent work			
	Questions to process as independent work	Performing an individual task to create a database. Filling the database		
Topic 8	*Work in classes*			
	Laboratory classes	Laboratory work 7. Creating a database. Designing queries	Laboratory tasks (defending)	10
			Control work	8
			Presentation	5
	Independent work			
	Questions to process as independent work	Working on the individual task for designing forms and reports. Preparation for the defense of laboratory work. Passing testing, performing control work, preparing a presentation	Testing	2

Recommended literature

Main

1. Informatics (spec. 6.073.20, 6.073.30, 6.073.40 1 year of study 2021/2022), assoc. prof. Gorokhovatskyi O.) / О. В. Гороховатський [Електронний ресурс]. – Режим доступу: https://pns.hneu.edu.ua/course/view.php?id=3542

Additional

2. Інформатика в сфері комунікацій [Електронний ресурс]: навчально-практичний посібник: у 3-х ч. Ч. 2 : Обробка та аналіз даних / С. Г. Удовенко, О. В. Тесленко, Н. О. Бринза [та ін.]; за заг. ред. С. Г. Удовенка; Харківський національний економічний університет ім. С. Кузнеця. - Електрон. текстові дан. - Харків: ХНЕУ ім. С. Кузнеця, 2019. - 249 с.

3. Alexander, M., Kusleika, D., & Walkenbach, J. (2019). Excel 2019 bible.

4. Watson, D., & Williams, H. (2019). Cambridge International AS and a Level Computer Science. London: Hodder Education Group.