NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of information systems

SYLLABUS
of the course

"INFORMATION SYSTEMS IN MANAGEMENT"

Area of knowledge 07 – «Management and Administration»
Specialty 073 – «Management»
Faculty of Information technology
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Kyiv – 2021

1. Description of the course "Information systems in management"

Area of knowledge, direction of preparation, specialty, educational and qualification level	
Area of knowledge	07 «Management and administration»
Specialty	073 «Management»
Educational and qualification level	bachelor

Characteristics of the course	
View	*normative*
Total number of hours	*120*
Number of credits ECTS	*4*
Number semantic modules	*2*
Course project (work) (if available in curriculum)	-
Form of control	*Exam*

Descriptions of the course for full-time and distance learning		
	full-time education	correspondence form of training
Year of preparation	*2*	
Semester	*4*	
Lectures	*15 hrs.*	
Practical works	-	
Laboratory classes	*45 hrs.*	
Independent work	*60 hrs.*	
Individual tasks	-	
Number of weekly hours for full-time students: classroom	*4 hrs.*	

2. Goals and objectives of the course

The course «Information systems in management» is designed to provide the necessary knowledge about the theory and practice of using modern information systems and technologies in management and is an important course for the preparation of students of the specialty - 073 «Management». The acquired skills of working with advanced functions of MS Excel, database management systems and online systems will enhance the performance of the tasks by future specialists.

The purpose and role of the course in the system of preparation of specialist. The purpose of discipline is mastering (acquiring knowledge) by students from modern information technologies, which would enable to work on a personal computer, fast, and qualitatively deciding (solving) tasks on the profile of the future specialty.

Tasks of the study (learning) of the course:
The primary goals of discipline are:
- understanding of the role and place of modern information systems and technologies;
- mastering the most common office automation technology;
- learn how to manage a modern database management system (DBMS);
- learn how to effectively solve logical, economic and financial problems using spreadsheet Excel;
- learn practical computer skills needed to solve problems on the profile of the future profession.

The student should know:
- how to operate with spreadsheet MS Excel (Working with logical, economic and financial functions);
- how to be able to use the different functions of MS Excel and DBMS Access;
- theoretical bases of databanks and databases management systems;
- main characteristics and possibilities of DBMS Access.
- to apply technologies of automation of office to solution of economic and administrative (managerial) tasks;
- effective to work on a personal computer, fast and qualitatively deciding (solving) tasks on the profile of the future specialty.

The course provides the formation of a number of general competencies:

General competences (GC)

GC 8 Skills in the use of information and communication technologies.

Special (professional, subject) competences (SC)

SC 1. Ability to identify and describe the characteristics of the organization.
SC 5. Ability to manage the organization and its departments through the implementation of management functions.

SC 11. Ability to create and organize effective communications in the management process.
SC 12. Ability to analyze and structure the problems of the organization, to form sound decisions.

Program competences (PC)

PC 6. Identify skills of search, collection and analysis of information, calculation of indicators for justification management decisions.
PC 8. Apply management methods to ensure the effectiveness of the organization.
PC 11. Demonstrate skills of situation analysis and communication in various areas of the organization.
PC 21. Demonstrate the ability to use information and communication technologies to search, process, analysis and use of information from various sources.

Final form of control of the discipline: Exam.

3. The program of the course

Module 1. Information Systems in Management

Theme 1. Information systems and their classification

Introduction to Information systems in management. Data and Information. Functions of the information system. Types of Information System. Transaction Processing System (TPS). Management Information System (MIS). Artificial intelligence techniques in business. Online Analytical Processing (OLAP).

Theme 2. Management Information Systems

Understand Management Information Systems (MIS) and their role in today's organizations.

Theme 3. Expert Systems

Introduction to Expert Systems. General description for human expert vs. expert system. Typical Tasks for Expert Systems. Characteristics of Expert Systems. Components of an Expert system. Inference techniques.

Theme 4. Decision Support System (DSS)

Introduction to Decision Support Systems. Meaning and characteristics of DSS. Capabilities of DSS. Types of Decision Support Systems. Components of DSS.

Theme 5. Enterprise Resource Planning (ERP) systems

Evolution of ERP. Integrated Information Systems (ERP) and Integrated Business Processes. Concept of Enterprise Resource Planning (ERP) systems, and their relationship with Integrated Business Processes.

Module 2. Databases and Database Management System

Theme 6. Big Data, Database Management System

Data is the raw material upon which information is built. We will discuss the role played by data (and, particularly, data structure) in MISs, and analyze the Database Management Systems used to manage data. We shall then explore the fast-evolving landscape of Big Data.

Theme 7. Basics of Databases and database management systems MS Access

General features the DBMS; the main objects of the database in MS Access; Structure and properties of tables; Working with DB tables and editing.

Theme 8. Working with data in MS ACCESS

Relationships between tables; create different types of forms, use of the forms; use of filters.

Theme 9. Create query in MS ACCESS

Create different types of queries, using of query, types of queries.

Theme 10. Create reports in MS ACCESS

Data protection and access to data; tools of create a report; editing a report; create of the macros.

3. Structure of the course

Names of semantic modules and themes	Amount of hours											
	Daily form						Correspondence form					
	total	including					total	including				
		l	p	lab	ind	i.w		l	p	lab	ind	i.w
Module 1. Information Systems in Management												
Theme 1. Information systems and their classification	7	1				6						
Laboratory lesson 1	2			2								
Theme 2. Management Information System	7	1				6						
Laboratory lesson 2	4			4								
Theme 3. Expert system	8	2				6						
Laboratory lessons 3	4			4								
Theme 4. Decision Support System (DSS)	8	2				6						
Laboratory lesson 4	4			4								
Theme 5. Enterprise Resource Planning (ERP) systems	8	2				6						
Laboratory lesson 5-6	6			6								
Module test 1	2			2								
Total for module 1	60	8		22		30						
Module 2. Databases and Database Management System												
Theme 6. Big Data, Database Management System	7	1				6						
Laboratory lesson 7	4			4								
Theme 7. Basics of Databases and database management systems MS Access	7	1				6						
Laboratory lesson 8	5			5								
Theme 8. Working with data in MS Access	8	2				6						
Laboratory lesson 9	2			6								
Theme 9. Create query in MS Access	8	2				6						
Laboratory lesson 10	6			6								
Theme 10. Create reports in MS Access	7	1				6						
Module test 2	2			2								
Total for module 2	60	7		23		30						
Total for semester	**120**	**15**		**45**		**60**						
Total hrs.	**120**	**15**		**45**		**60**						
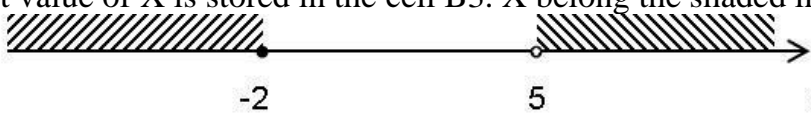
4. Topics of laboratory lessons

№	Name of theme	Amount of hours
1	Laboratory lesson 1 Planning of works by means of Excel	2
2	Laboratory lesson 2 Control the executing of works with help of MS Excel	4
3	Laboratory lesson 3 Using the tools of «Goal Seek» and «Solver» for solving of management tasks	4
4	Laboratory lesson 4 Application of decision tree for solving management problems	4
5	Laboratory lesson 5 Financial analysis of investments based on the table of substitution	6
6	Laboratory lesson 6 Tasks on forecasting in management	2
7	Module test 1	2
8	Laboratory lesson 7 Creating tables in Access database	4
9	Laboratory lesson 8 Creating queries in Access database	5
10	Laboratory lesson 9 Creating forms in Access database	6
11	Laboratory lesson 10 Create reports of Access database	6
12	Module test 2	2
13	Total	45

6. Independent work

№	Name of theme	Amount of hours
1.	Information systems and their classification	6
2.	Management Information Systems	6
3.	Expert Systems	6
4.	Decision Support System (DSS)	6
5.	Enterprise Resource Planning (ERP) systems	6
6.	Big Data, Database Management System	6
7.	Basics of Databases and database management systems MS Access	6
8.	Working with data in MS Access	6
9.	Create query in MS ACCESS	6
10.	Create reports in Access	6
11.	Total	60

7. Control questions tests for determining the level learning of knowledge students

National University of Life and Environmental Sciences of Ukraine

Educational qualification level Bachelor	Department of Information systems and technologies 20__ – 20___ y	Examination ticket № 1 by discipline Information systems in management	Approved Head of the department _____ _____ M. Shvydenko ___. ___. 20__

Test questions

Question 1. What formula will be indicated in the cell of D5 at a copy formula =A2*C2*B10 from the cell of D2?
a. =A2*C2*B10
b. =A5*C5*B14
c. =A5*C5*B10
d. =A5*C5*B10

Question 2. How to show unpaired notes of table database (DBMS) Access?
a. [nomer] mod 2=0
b. [nomer]/2<>0
c. [nomer] mod 2<0
d. [nomer]/2=0
e. [nomer]/2>0

Question 3. Let value of X is stored in the cell B3. X belong the shaded interval.

a. ИЛИ(B3<=-2; B3>5)
b. И(B3<=-2; B3>5)
c. ИЛИ(X<=-2; X>5)
d. (B3<=-2) ИЛИ (B3>5)
e. (B3<=-2) AND (B3>5)

Question 5. What can you say about formula =1+sin x/((3-Б7)+1 ?
a. uncorrected using of addressing
b. it is a true formula
c. uncorrected using of braces
d. it is a true but not optimized formula
e. uncorrected using of SIN function

Question 4. What type of the chart ?

x	y
-5	-4,04108
-4,5	-3,52247
-4	-3,2432
-3,5	-3,14922
-3	-3,14112
-2,5	-3,09847
-2	-2,9093
-1,5	-2,49749
-1	-1,84147
-0,5	-0,97943
0	0
0,5	0,979426
1	1,841471
1,5	2,497495
2	2,909297
2,5	3,098472
3	3,14112
3,5	3,149217
4	3,243198
4,5	3,52247

y = x+sin x
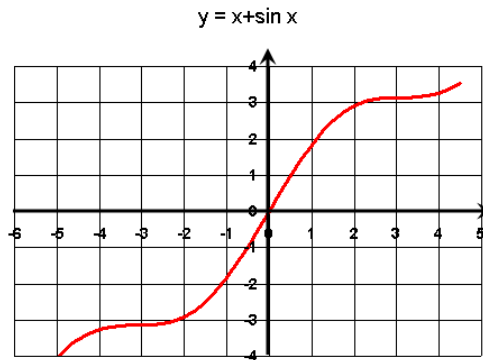
a. Bar/column chart (histogram)
b. Line chart
c. X-Y chart
d. Pie chart

Question 6. Let value of X is stored in the cell A5. What formula is correct for getting Y?

$$y = \begin{cases} \dfrac{1+x}{e^x}, x < 0 \\ \cos x, x \geq 0 \end{cases}$$

a. =ЕСЛИ (A5<0; (1+A5)/ EXP(A5); COS (A5))
b. =ЕСЛИ (A5<0; (1+A5)/ E^A5; COS (A5))
c. =ЕСЛИ (A5<0; 1+A5/ EXP(A5); COS (A5))
d. =ЕСЛИ (X<0; (1+X)/ EXP(X); COS (X))

Question 7. The formula =c3*D3 is located in cell B1. If this was copied and pasted into cell C1, what would the resulting formula be:

	A	B	C	D
1		=C3*D3	???????	
2	3	3	4	6
3	5	4	3	8
4	4	3	4	9

a. =c3*d4
b. =c3*e4
c. =c3*d3
d. =c3*e3

Question 8. Which of the following database components can be used to make it easier for you to enter data into a table?
a. A page
b. A form
c. A report
d. A query

Question 9. Information, placed in database is stored:
a. In tables
b. In each object of database
c. In queries
d. In reports

Question 10. Which models of data is used by database (DBMS)?
a. relational

b.	b. networking, relational, hierarchical
c.	relational, hierarchical
d.	networking, relational

<div align="center">Examination task 1</div>

With the use of spreadsheet MS Excel find out the value of the function

$$F(X) = \begin{cases} \text{good morning, if } x \in [5;11) \\ \text{good afternoon, if } x \in (13;16] \\ \text{good evening, if } x \in (19;24] \\ \text{it is time to go to bed, on other cases} \end{cases}$$

in the time interval 1-24 h. with a step of 1 hour, using logic functions.
The value of the argument x is need to be placed in one of the workbooks x
a result – a value of the function *F(x)* in another one *F(x)*
The data of these two tables must be visible on the screen.

<div align="center">Examination task 2</div>

Using MS Access create a database file named Exam1.mdb. In this file, create a table with the designer.
The table structure and data types must be defined by yourself in order to view a table in presentation of table view would be as follows as below. Save a table named Students. When you save the table key field does not create.

№	Surname	Mark
1	Petrov	4
2	Ivanov	2
3	Sidorov	2

Using the master shapes, create and save the form under the name Students 2 belt - type with which you can enter data in all fields of the table Students.

8.Teaching Methods

The material taught in lectures, laboratory works and independent works in computer class that is equipped of local area networks, the Internet and the latest software. Lectures are accompanied by the use of presentations, training films and multimedia equipment to facilitate the assimilation of the material.

9.Forms of control

Control knowledge in the students of the course "Information systems in management" provides the following control measures:

• *Self-control* is the primary form of control knowledge's that are provided by the distance learning courses provide students with a list of questions (questions and answers);
• *Current control* – through direct teacher evaluation system laboratory practical workshops and assignments for independent work;

• *Modular control* – performed remotely in an automated mode or full-time mode, which is the main form of testing;
• *Final control* – a test that consists of full-time during the designated dean's office or individual schedule, approved curriculum. The basic form of the final control is tested.

10. Description of institutional grading system.

Evaluation of the student is realized according to the provisions «About the examinations and tests of NULES of Ukraine» dated by 27.20.2019. The protocol number 7 according to the table. 1.

National Grade	Rating of student, scores
Excellent	90 – 100
Good	74 – 89
Pass	60 – 73
Fail	0 – 59

For determination of the rating of the student (listener) from mastering to the discipline **R** course (100 points) obtained ranking in certification (30 points) added to the rating of student (listener) for Academic work **R**ed (70 points):
 R course = **R**ed + **R**at

11. Methodical maintenance

1. Soroka P.M., Kharchenko V.V. Information systems in management. Practical work Educational book К: ЦП «Компрінт», 2012. – 145 p.
2. Kharchenko V.V., Kasatkina O.M. Modern information systems and technologies. Methodical manual for the students of computer science and economic cybernetics and economic specialties – К: ЦП «Компрінт», 2014 – p. 121.
3. Сорока П.М. Інформаційні системи у менеджменті Практикум. Навч. посіб. з грифом МОН К.: Вид-во ТОВ «Аграр Медіа Груп», 2012. – 358 с.

12. Recommended Literature

Main sources:

1. Касаткін Д.Ю., Глазунова О.Г., Блозва А.І., Касаткіна О.М. «Практикум з інформатики». Навчальний посібник (2 видання) – К: ЦП «Компринт», 2017. – 382 с.
2. Сорока П.М. Харченко В.В. Харченко Г.А. Інформаційні системи і технології в управлінні організацією К: «Компринт», 2019. – 518 с.
3. Сорока П.М. Харченко В.В. Практикум з інформаційних систем в управлінні організацією – К: ЦП «Компрінт» 2017 р. – 378 с.

Auxiliary sources:

1. Касаткін Д.Ю., Блозва А.І., Касаткіна О.М. «Інформатика і системологія» Підручник. – К: ЦП «Компринт», 2017. – 421 с.
2. Швиденко М.З. «Інформатика та комп'ютерна техніка» Підручник. [для студ. екон. спец. вищих навч. закладів] – К: Інтерсервіс, 2014. – 647 с.
3. Садко М.Г., Сорока П.М. Навчально-методичний посібник «Бази даних та системи управління базами даних». – К: НУБіП, 2014. – 120 с.

13. Information Resources

1. Курс лекцій з дисципліни "Основи інформаційних технологій" [Електронний ресурс] – Джерело: http://www.informatuka.info/index.php
2. Дистанційні курси "Word та Excel: інструменти і лайфхаки" на платформі Prometheus [Електронний ресурс] – Джерело: https://edx.prometheus.org.ua/courses/course-v1:DNU+PRIN-101+2017_T1/about
3. Дистанційні курси "Цифрові комунікації в глобальному просторі" на платформі Prometheus [Електронний ресурс] – Джерело: https://courses.prometheus.org.ua/courses/course-v1:Prometheus+ITArts101+2017_T1/about
4. Планета Excel [Електронний ресурс] – Джерело:http://www.planetaexcel.ru/