INTERNATIONAL EUROPEAN UNIVERSITY
Education and Research Institute "European Business School"
Department of Information Technology

Approved by
The Scientific and Methodical Council of the University

Chair of SMC _____

WORKING PROGRAM OF THE ACADEMIC DISCIPLINE:

INFORMATION SYSTEMS AND TECHNOLOGIES

Level of higher education:	First (Bachelor) level
Degree:	Bachelor
Knowledge area:	07 Management and Administration
Specialty:	075 Marketing

Kyiv – 2023

The working program of the Information systems and technologies academic discipline for the first (Bachelor) level is based on the following educational and professional programs: Germanic Languages and Literature of the 035 Philology specialty, Psychology of the 053 Psychology specialty, Management of the 073 Management specialty, Marketing of the 075 Marketing specialty, and Tourism of the 242 Tourism and Recreation specialty approved by the University Academic Council on May 30, 2023, protocol No. 4.

Developer: Zoia Sherman, PhD in Physics and Mathematics, associate professor

Reviewers: Oleksandr Nesterenko, Doctor of Science (Techn.), professor
Oleksandr Falovskyi, PhD in Technology

Guarantors of the educational program:
Olena Pokatilova, PhD in Pedagogy,
Olena Vyshnevska, PhD in Psychology,
Nataliia Pryimak, PhD in Economics,
Roman Halenin, PhD in Economics,
Khrystyna Solomchak, PhD (Pedagogy)

The working program of the academic discipline is reviewed and approved by the Department of Information Technology, protocol dd. August 31, 2023, No. 1.

Head of the Department
Doctor of Science (Techn.),
professor  O.V. Nesterenko,

The program is reviewed and approved by the Academic Council of the European Business School, protocol dd. September 11, 2023, No. 1.

Chair of the Academic Council
PhD in Economics, associate professor,
Acting Director
of the European Business School  Y.S. Remyha,

INTRODUCTION

The **program of the Information systems and technologies academic discipline** is designed according to the Standards and other regulatory documents on higher education of Ukraine for the following knowledge areas: 03 Humanities of the 035 Philology specialty, 05 Social and Behavioral Sciences of the 053 Psychology specialty, 07 Management and Administration of the 073 Management specialty, 075 Marketing of the 075 Marketing specialty, and 24 Service sector of the 242 Tourism and Recreation.

Discipline description (annotation). This academic discipline is one of the professional disciplines for future marketing specialists.

Table 1

<table>
<tr><td rowspan="2">Criteria</td><td rowspan="2">Knowledge area, training program, educational level</td><td colspan="2">Discipline characteristics</td></tr>
<tr><td>full-time mode of study</td><td>part-time mode of study</td></tr>
<tr><td>Number of credits – 4</td><td>Knowledge area:
07 Management and Administration</td><td colspan="2"><u>Compulsory</u></td></tr>
<tr><td>Sections – 1</td><td rowspan="7">Specialty:
075 Marketing</td><td colspan="2">Year of training</td></tr>
<tr><td>Content sections – 1</td><td>2023</td><td></td></tr>
<tr><td rowspan="3">Individual research task:</td><td colspan="2">Semester</td></tr>
<tr><td colspan="2">1st</td></tr>
<tr><td colspan="2">Lectures</td></tr>
<tr><td rowspan="2">Total amount of hours – 120</td><td colspan="2">24 hours</td></tr>
<tr><td colspan="2">Practical and laboratory classes</td></tr>
<tr><td rowspan="4">Weekly load:
class hours – 3
independent work of students – 4</td><td rowspan="4">Educational level:
Bachelor</td><td colspan="2">Independent work</td></tr>
<tr><td colspan="2">72 hours</td></tr>
<tr><td colspan="2">Type of control:</td></tr>
<tr><td colspan="2">exam</td></tr>
</table>

Subject matter of the academic discipline: the study of the basics of development and functioning of marketing information systems, modern technological means of data processing and criteria for their efficient use to solve key marketing objectives.

Interdisciplinary links: The academic discipline is elective in the professional training system and is based on separate topics of such disciplines as Statistics, Economic theory and Marketing.

1. GOAL AND OBJECTIVES OF THE ACADEMIC DISCIPLINE

1.1. The **goal** of the Information systems and technologies discipline is to provide future specialists with knowledge of the principles of information technology and processes occurring in the processing of information, abilities and practical skills in working with the main means of information technology used in office and scientific activities.

1.2. **Key objectives** of the Information systems and technologies discipline:

- to expand students' knowledge of the modern information picture of the world and new trends in the development of information technologies to support management activities;
- to introduce students to different types of information systems and information technologies;
- to reveal the place and importance of information technologies in the development of society;
- to make students understand the basic principles of developing information technologies and systems when solving problems in marketing;
- to provide students with knowledge, skills and ability to manage operations of information technology tools;
- to provide students with the ability to work with a specific class of software to ensure accounting, economic and marketing activities;
- to develop skills of using the acquired knowledge to solve problems in marketing and apply information technologies in accounting, economic and marketing activities.

1.3. **Competencies and learning outcomes** encouraged by the discipline (interrelation with the statutory content of student training stipulated in learning outcome terms of the Standard).

According to the Standard requirements, the discipline provides students with the following ***competencies:***

Table 2

Integral competence	Ability to solve complicated specialized tasks and practical problems in the marketing sector or during study, which implies application of appropriate theories and methods and is characterized by complexity and uncertainty of conditions.
General competencies	Ability to exercise your rights and obligations as a member of society, realize values of civil (democratic) society and need for its steady growth, supremacy of law, rights and freedoms of individuals and citizens in Ukraine. Ability to keep and multiply moral, cultural, scientific values, as well as multiply achievements of society based on the understanding of history and regularities of subject area development, its place in the general system of knowledge about nature and society and in the evolution of society, engineering and technologies, as well as to use different types and forms of physical activity for outdoor activities and a healthy lifestyle. Distinctness and insistence regarding set objectives and taken responsibilities.

	Ability to apply and comply with national and international standards, effective legal standards in professional activities.

Specification of competencies according to the National Qualifications Framework descriptors in the Competency matrix form is given in Table 3.

Table 3

Competency matrix

No.	Competence	Knowledge	Skills / Abilities	Communication	Autonomy and responsibility
Integral competence					
1.	Ability to solve complicated specialized tasks and practical problems in the marketing sector or during study, which implies application of appropriate theories and methods and is characterized by complexity and uncertainty of conditions	functioning and application of modern information systems to support marketing managerial decisions	To use information technologies, basic system and application software to solve practical problems	Software interaction	Independent design and testing on the production site
General competencies					
2.	Understanding of the processes occurring in the operating system when processing information with application software. Ability to use knowledge in practical programming situations. Ability to search, process and analyze information for application in programming.	structure of modern information systems	To show the ability to conduct research related to the specifics of the subject area of marketing	Relation between theoretical and practical knowledge	Monitoring of information processing processes

Integrated final program learning outcomes encouraged by the academic discipline:

Program learning outcomes Bachelor's qualifying paper

Learning outcomes:

After learning the discipline, students should

know:

- the purpose of different types of information systems and information

technologies;
- criteria for the selection and application of information and communication networks and their components in accounting, economic and marketing activities;
- functional features of information and communication technologies, application packages, economic and mathematical methods and models;
- basic concepts of information protection;
- system approaches to automated problem solving in marketing.

be able to:

- use economic and mathematical methods and models to solve practical problems in marketing;
- choose software in accordance with the requirements of accounting, economic and marketing activities;
- search, collect and analyze information, calculate indicators to justify marketing decisions.

2. INFORMATION CAPACITY OF THE ACADEMIC DISCIPLINE

The Information systems and technologies academic discipline consists of 120 hours / 4 ECTS credits.

Topic 1. Theoretical foundations of information relations in society.

Topic 2. Basic concepts of information technology as a tool for processing marketing information and managing marketing activities.

Topic 3. Data, information, decisions to ensure management activities.

Topic 4. Organization of work and basic methods and means of information processing in electronic office conditions.

Topic 5. Cloud technologies and information systems in marketing.

Topic 6. Key functions of office applications.

Topic 7. Spreadsheet software.

Topic 8. Multimedia and computer graphics.

Topic 9. Hardware. Software.

Topic 10. Computer networks. Information system security.

Topic 11. Client-oriented information systems.

Topic 12. Decision-making support systems and means of analyzing data of accounting, economic and marketing activities.

3. STRUCTURE OF THE ACADEMIC DISCIPLINE

Content modules and topics	Amount of hours				
	Total	including			
		l	p. c.	lab.	i. w.
1	2	3	4	5	6
Content module 1. Information systems and technologies in marketing management					
Topic 1. Theoretical foundations of information relations in society.	10	2	2	-	6
Topic 2. Basic concepts of information technology as a tool for processing marketing information and managing marketing activities.	10	2	2	-	6
Topic 3. Data, information, decisions to ensure management activities.	10	2	2	-	6
Topic 4. Organization of work and basic methods and means of information processing in electronic office conditions.	10	2	2	-	6
Total per content module	40	8	8	-	24
Content module 2: Information technologies for office and scientific activities.					
Topic 5. Cloud technologies and information systems in marketing.	10	2	2	-	6
Topic 6. Key functions of office applications.	10	2	2	-	6
Topic 7. Spreadsheet software.	10	2	2	-	6
Topic 8. Multimedia and computer graphics.	10	2	2	-	6
Total per content module	40	8	8	-	24

Content module 3. Working with I/O functions and term variables.					
Topic 9. Hardware. Software.	10	2	2	-	6
Topic 10. Computer networks. Information system security.	10	2	2	-	6
Topic 11. Client-oriented information systems.	10	2	2	-	6
Topic 12. Decision-making support systems and means of analyzing data of accounting, economic and marketing activities.	10	2	2	-	6
Total per content module	40	8	8	-	24
Total hours	120	24	24		72

4. TOPICS OF LECTURES

No.	Topic (brief content)	Amount of hours
1	Topic 1. Theoretical foundations of information relations in society. The concept of information. Types, forms and sources of information. Properties of information. Methods of information evaluation. Classification of information. Information as a product of dialectical interaction of data and processing methods.	2
2	Topic 2. Basic concepts of information technology as a tool for processing marketing information and managing marketing activities. Information technologies: main concepts, definitions, types, classification. Method of information processing based on available technologies. Hardware and resource support of information technologies. Information resources and processes. Methodological aspects of selecting technologies for processing information resources.	2
3	Topic 3. Data, information, decisions to ensure management activities.	2
4	Topic 4. Organization of work and basic methods and means of information processing in electronic office conditions. Documentary support of marketing and management activities of the organization. Structural features of office documents of different types. Composition, design and publication of the main types of documents.	2
5	Topic 5. Cloud technologies and information systems in marketing.	2

	Definition of cloud computing. Cloud infrastructure deployment models. Cloud infrastructure maintenance models. Technological foundations of cloud computing operation.	
6	Topic 6. Key functions of office applications. Composition of Microsoft Office. Product versions and their support.	2
7	Topic 7. Spreadsheet software. Spreadsheet processors and their functions. Typical interface structure. Techniques of working in spreadsheets.	2
8	Topic 8. Multimedia and computer graphics. The concept of computer graphics. History of the development of computer graphics. Graphics information. Computer graphics task. Recognition of images.	2
9	Topic 9. Hardware. Software. Software structure.	2
10	Topic 10. Computer networks. Information system security. Components of information and telecommunication technologies and systems: hardware and software. The essence of the modern term of information technology. The concept of MRP II. The concept of the enterprise resource planning system (ERP system). The essence and main components of customer relationship management (CRM), supply chain management (SCM), business intelligence (BI), knowledge management (KM). The concept of telecommunication computer network, protocol and interface. Features reflecting the properties of the network: territorial spread, departmental affiliation, speed of information transmission, type of transmission medium. The concept of local area networks and their examples - Arcnet, Ethernet and Token Ring.	2
11	Topic 11. Client-oriented information systems. The evolution of CRM strategy. The concept of CRM evolution. The role of information technology in CRM strategy. Impact of technology on sales culture. Reasons for the application and refusal of companies from the application of CRM strategy. Application of CRM strategy in different industries. Marketing automation. Marketing initiatives of CRM strategy.	2
12	Topic 12. Decision-making support systems and means of analyzing data of accounting, economic and marketing activities. Classification of software products in marketing information systems of organizations of different industries. Accounting and CRM software. CRM products on the market: Sales Expert, MySAP CRM, Monitor 3.0 CRM. Software for sales and product analysis: Parus Analytics, S.M.A.R.T., Galaxy, Business Intelligence, Sales Forecasting. Software for monitoring the external marketing environment: Competitive benchmarking and competitive intelligence, Price monitoring and price comparison. Software for conducting marketing research: Ulter Systems Pulsar, Ulter Systems and Mercury, VORTEX, Set of software programs for determining the optimal price for a product (there are several modifications). Software for working with text arrays: Galaxy ZOOM, Text Analyst. Online information and analytical systems: Medialogy, Integrum.	2

5. TOPICS OF LABORATORY AND PRACTICAL CLASSES

No.	Topic (brief content)	Amount of hours
1	Topic 1. Theoretical foundations of information relations in society. Information systems. The concept of information systems. Purpose of creation of management IS. The task of IS. Structure and features of information systems. The main types of information systems, tasks, functions and classifications.	2
2	Topic 2. Basic concepts of information technology as a tool for processing marketing information and managing marketing activities.	2
3	Topic 3. Data, information, decisions to ensure management activities. Stages of planning of information support of marketing activities. Functions and a typical list of duties of the person responsible for information support of marketing activities. Information needs in marketing. Principles and rules of information support planning.	2
4	Topic 4. Organization of work and basic methods and means of information processing in electronic office conditions. The concept of electronic document. Electronic document management. The concept of electronic office and its functions. The concept of electronic office. Purpose of electronic office, its advantages and disadvantages. The main components of the electronic office.	2
5	Topic 5. Cloud technologies and information systems in marketing.	2
6	Topic 6. Key functions of office applications. Processing and analysis of marketing information: preliminary stages of editing, coding, tabulating and presenting tabulated data.	2
7	Topic 7. Spreadsheet software. Other types of information systems: expert, management knowledge, strategic information, business information, integrated information systems.	2
8	Topic 8. Multimedia and computer graphics. Basic characteristics of marketing information systems: process management systems; management decision support systems	2
9	Topic 9. Hardware. Software. Basic concepts in the management system: transaction processing systems (OLTP); management information systems, decision support systems (DSS). Components of management information systems. The main types of resource support of marketing information systems: human, hardware, software, network, information.	2
10	Topic 10. Computer networks. Information system security. Software components of Oracle CRM. The concept of corporate information systems. The concept of intranet and extranet.	2

	Components of information and telecommunication technologies and systems: hardware and software. The essence of the modern term of information technology. The concept of MRP II. The concept of the enterprise resource planning system (ERP system). The essence and main components of customer relationship management (CRM), supply chain management (SCM), business intelligence (BI), knowledge management (KM). The concept of telecommunication computer network, protocol and interface. Features reflecting the properties of the network: territorial spread, departmental affiliation, speed of information transmission, type of transmission medium. The concept of local area networks and their examples - Arcnet, Ethernet and Token Ring.	
11	Topic 11. Client-oriented information systems. The use of CRM strategy in the service industry, contact center automation and its role in retaining new customers. The use of CRM strategy in sales. Functions of modern CRM systems providing sales.	2
12	Topic 12. Decision-making support systems and means of analyzing data of accounting, economic and marketing activities. Modern communication technologies in sales automation. Analytical abilities of CRM. Unified customer database. Basic types of analysis and analytical abilities of CRM. Web activity analysis and personalization. Modern embedded contact center. Principles of its construction, capabilities, issues of contact center establishment.	2

6. INDEPENDENT WORK

No.	Topic (brief content)	Amount of hours
1	Topic 1. Theoretical foundations of information relations in society.	2
2	Topic 2. Basic concepts of information technology as a tool for processing marketing information and managing marketing activities.	2
3	Topic 3. Data, information, decisions to ensure management activities.	2
4	Topic 4. Organization of work and basic methods and means of information processing in electronic office conditions.	2
5	Topic 5. Cloud technologies and information systems in marketing.	2
6	Topic 6. Key functions of office applications.	2
7	Topic 7. Spreadsheet software.	2
8	Topic 8. Multimedia and computer graphics.	2
9	Topic 9. Hardware. Software.	2
10	Topic 10. Computer networks. Information system security.	2
11	Topic 11. Client-oriented information systems.	2
12	Topic 12. Decision-making support systems and means of analyzing data of accounting, economic and marketing activities.	2

7. TRAINING METHODS

Teaching the Information systems and technologies discipline, one uses information and practical training methods: classical lectures, laboratory and practical classes using simulation laboratory workshops, as well as consultations on the accomplishment of independent work of students, written assignments.

Methods of learning and cognitive activity: explanatory and illustrative method, reproductive method, problem presentation method, partially exploratory or heuristic method, research method.

Methods of stimulation and motivation of learning and cognitive activity: inductive and deductive teaching methods; methods of stimulation and motivation of learning.

8. CONTROL METHODS

The plan of the Information systems and technologies discipline implies carrying out of current and final control.

Current control is the assessment of the level of knowledge, skills and abilities of students carried out during the educational process by conducting a written survey at the end of sections (module colloquium). Final control is carried out in the form of an exam.

9. FORM OF STUDENT PERFORMANCE FINAL CONTROL

The form of final control is the **exam** taken on-campus (or in the form of computer test in case of a specific situation) in the period stipulated by the Dean's office or according to the individual schedule stipulated by the curriculum.

10. SCORING SYSTEM

Scoring during the semester

No.	Type of activity	Number of points per didactic unit	Number	Total points
1	Accomplishment of tests	2	8	16
2	Accomplishment of laboratory works	4	8	32
3	Accomplishment of independent tasks	1.5	8	12
Maximum grade				60

General assessment of student knowledge due to current control

The results of current control of student knowledge are assessed in general ranging from **0** to **60** points.

Students are allowed to final control if they fulfil the requirements of the training program and obtain at least **36** points for the current learning activity.

Final assessment of student knowledge

Final assessment of student knowledge is conducted in the form of **exam**.

Allocation of assessment points during final control in the academic discipline

Grade in points for final assessment	Grade according to the national scale
35-40	Excellent
21-34	Good
10-20	Satisfactory
less than 10	Fail

Assessing the answer to the particular question, one takes into account the following gaps and mistakes:

– untidy preparation of work (nonconventional abbreviations, unclear handwriting, use of pencils instead of clear inks) (minus **2** points);

– incorrectness in certain economic categories and definitions (minus **4** points).

Assessment criteria for answers to theoretical questions of the exam card:

1. The full answer to the question rated as ***excellent*** should correspond to the following requirements:

– detailed, comprehensive representation of the content of the given problem;

– full list of economic categories and laws required to reveal the question;

– ability to carry out a comparative analysis of various theories, concepts, approaches and make logical conclusions and generalizations;

– ability to apply methods for the scientific analysis of economic phenomena, processes and characterize their features and forms of appearance;

– demonstration of the ability to express and reason your own attitude to alternative views on this question;

– use of relevant actual and statistical data, knowledge of dates and historical periods that prove key points of the answer.

2. The answer to the question is rated as ***good*** if:

– the answer for the highest grade does not reveal at least one of the above-mentioned points (if it is definitely required to reveal the question comprehensively), or if:

– revealing the question correctly in general according to the above-mentioned requirements, one makes some mistakes while using digital materials.

3. The answer to the question is rated as ***satisfactory*** if:

– the answer for the highest grade does not reveal four and more points specified in its requirements (if they are required to reveal the question comprehensively);

– there are four or more gaps characterizing individually assessment criteria;

– conclusions made during the answer do not correspond to correct or generally defined ones with the absence of evidence for opposite facts given in the answer;

– the character of the answer gives reason to state that persons fail to understand the question properly or do not know the correct answer, and that is why fail to answer in actual fact, making serious mistakes.

National and ECTS grading scale

<table>
<tr><td rowspan="2">Sum of points for all types of educational activities</td><td rowspan="2">ECTS grade</td><td colspan="2">Grade according to the national scale</td></tr>
<tr><td>for exam, term paper, practical training</td><td>for Pass/Fail test</td></tr>
<tr><td>90-100</td><td>A</td><td>excellent</td><td rowspan="5">pass</td></tr>
<tr><td>82-89</td><td>B</td><td rowspan="2">good</td></tr>
<tr><td>74-81</td><td>C</td></tr>
<tr><td>66-73</td><td>D</td><td rowspan="2">satisfactory</td></tr>
<tr><td>60-65</td><td>E</td></tr>
<tr><td>30-59</td><td>FX</td><td>fail with possible repeated pass</td><td>fail with possible repeated pass</td></tr>
<tr><td>1-29</td><td>F</td><td>fail with obligatory repeated learning of the discipline</td><td>fail with obligatory repeated learning of the discipline</td></tr>
</table>

The overall final grade in points according to the national and ECTS scales is put into the examination and test register, academic card and credit book of students.

11. METHODICAL SUPPORT:

- working program of the discipline;
- electronic course on the e-learning platform;
- plans of lectures, practical classes and independent work of students;
- key points of discipline lectures;
- methodical guidelines to laboratory and practical classes for students;
- methodical materials for independent work of students;
- test tasks for lecture topics;
- list of questions for the exam.

12. RECOMMENDED READING

Primary:

1. Nalyvaiko N.Y. Computer science. Study guide. K.: Center for Educational Literature. 2019. 576 p.
2. Computer science. Grade 10: standard level: textbook for general education

institutions / Y.Y. Ryvkind [et al.]; edited by M. Zhurovskyi. – Kyiv: Genesis, 2010.
3. Matviienko M.P., Rozen V.P., Zaladnyi O.M. Computer architecture. K.: Lira-K Publishing House, 2013. 264 p.
4. Operating systems: study guide / M.F. Bondarenko, O.H. Kachko. Kh.: SMIT Company, 2008. 432 p.
5. Habrusiev V.Y., Lapinskyi V.V., Nesterenko O.V. Fundamentals of operating systems: Kernel, process, thread. Ternopil: Bohdan, 2007. 94 p.
6. Information systems and technologies in the economy. Study guide / Edited by V.S. Ponomarenko, Doctor of Economics. K.: Academy Publishing Center, 2002. 542 p.
7. Fundamentals of information technologies and systems: textbook / V.A. Pavlysh, L.K. Hlinenko, N.B. Shakhovska. Lviv: Lviv Polytechnic, 2018. 620 p.
8. Nesterenko O.V. Information systems of enterprise management. Study guide. Kyiv: Ukrainian Scientific Center for Information Technology Development, 2019. – 135 p.

Additional:

1. Nesterenko O.V., Falovskyi O.O., Kovtunets O.V. Intelligent systems and technologies. Introductory course. Study guide. Kyiv: National Academy of Management, 2017. – 90 p.
2. Nesterenko O.V., Savenkov O.I., Falovskyi O.O. Decision support intelligent systems / Study guide. Edited by Bidiuk P.I. – K.: National Academy of Management, 2016. – 188 p.
3. Information systems and technologies: study guide [edited by V.M. Rudnytskyi] / I.M. Fedotova-Piven, I.V. Myronets, O.B. Piven, S.V. Sysoienko, T.V. Myroniuk; Cherkasy State Technological University. – Kharkiv: DISA PLUS LLC, 2019. – 216 p.

Information resources

1. https://www.microsoft.com/uk-ua/
2. https://stud.com.ua/informatika/
3. https://dou.ua/
4. http://it.ridne.net/
5. https://www.kernel.org/