NATIONAL UNIVERSITY OF BIORESOURCES AND NATURE USE OF UKRAINE
Department of Economic Cybernetics

"I APPROVE"
Dean of the Faculty of Agricultural Management
Prof. Anatoly OSTAPCHUK
(Signature)
"_____" _____2023

APPROVED
at the meeting of the Department of Economic Cybernetics
Protocol No. 10 dated May 18, 2023.
Head of Department

Prof. Dmytro ZHERLITSYN
(Signature)

CONSIDERED
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Doc. Violeta HERAIMOVYCH
(Signature)

WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

"INTERNET ANALYTICS"

Specialty**075 "Marketing"**
Educational program "Marketing"
Faculty of Agricultural Management
Compiled by: I. Kostenko, Ph.D. in Economics,
Senior lecturer of the Department of Economic Cybernetics,

Kyiv - 2023

1. Description of the academic discipline

«Internet analytics»

Field of knowledge, specialty, educational program, educational degree		
Educational degree	*Bachelor*	
Specialty	075 "Marketing"	
Educational program	"Marketing"	
Characteristics of the academic discipline		
Kind	selective	
Total hours	180	
Number of ECTS credits	6	
Number of content modules	2	
Course project (work) (if available)	-	
Form of control	*exam*	
Indicators of academic discipline for full-time and part-time forms of education		
	full-time education	external form of education
Course (year of training)		
Semester		
Lecture classes	*30 years.*	-
Practical, seminar classes	*30 years.*	-
Laboratory classes	*- a year.*	-
Independent work	*120 years.*	-
Individual tasks	*- a year.*	-
Number of classrooms per week hours for full-time education	*4 year.*	-

2. The purpose and tasks of the educational discipline

Goal. The discipline "Internet analytics" is aimed at students' consistent acquisition of skills in working with web analytics systems of the typeGoogle Analytics Universal, Google Analytics 4 as wellseparate sections inGoogle Search Console, Google Ads and Facebook Ads, open services of the typeGoogle Trends, Similarweb, Alexa, Semrush, Serpstat, Moz, Majestic, GemiusAudience, Seoquick, mastering the basics of data collection and analysis, understanding key digital business metrics.

The course material is designed in such a way as to gradually immerse the student in the world of data analysis, that is, from simple to complex: at the very beginning, this is an introduction to the concepts of offline and online business conversions, the formation of a business strategy based on clear real examples, the beginning of working with web tools analytics, their settings, and upon completion, an understanding of the logic of search algorithms, the features of setting up advertising campaigns, monitoring KPIs, creating analytical reports, a dashboard, and forecasting the CRI of a digital business.

So the purpose of the course is: acquiring theoretical and practical knowledge of the basics of Internet analytics, as well as skills in working with web analysis tools for data analysis and optimization of web resources.

Structurally, the course is divided into 15 topics, each of which contains 4-7 questions and necessarily an overview of various web analytics tools in each topic. The course examines the Canvas strategic business management methodology, shows the relationship between business indicators and Internet analytics. It is presented how to use reports to determine KPIs for business, to form an input and output task for monitoring the effectiveness of the resource, which metrics are appropriate for monitoring at different levels of the sales funnel, how to optimize the budget. Features of the formation of a competitive analysis of websites based on open digital business metrics (benchmarking) are given. A significant part of the educational material is work withGoogle Analytics (to configure data collection from your own educational site).Practical examples of statistical data analysis and visualization in the application software environment are presentedPower BI, Excel, Googlesheets, Data Studio. The methodology and applied aspects are consideredA/B testing (based on Google Optimize, Google Ads and Facebook Ads).

As a result of studying the discipline, the student acquires knowledge and applied skills in the basics of Internet analytics: understanding the main aspects of analyzing user behavior and traffic on web resources, knowledge of methods for determining the effectiveness of digital business, understanding the benefits of analytics tools for strengthening business strategy and key aspects for forming an information strategy, applied skills in working with analytics tools for automated collection of input data, end-to-end analytics and data visualization.

Course tasks:

• mastering the basic concepts of Internet analytics (web analytics);

• deepening of knowledge about the latest information technologies in web analysis;

• mastering basic techniques in SEO, SMM, PPC;

• deepening knowledge about audience (technical) metrics and KPIs of web resources in accordance with the levels of the sales funnel;

• acquisition of practical skills in the use of tools for web analysis.

To study the discipline, knowledge of information technologies, database management systems, statistics, and the basics of economics is required.

Mastering the material is ensured in lectures, laboratory classes and independent work in computer classes using multimedia technology, the latest software licensing.

When teaching the discipline, various teaching methods are used, which take into account a systematic approach, a modular rating system for monitoring student learning.

Assessment of students' knowledge is carried out with the help of assessment tests, written control measures, assessment of individual computational and analytical tasks.

As a result of mastering the program, applicants must:

know:

• key indicators for forming the business strategy of the company's web resource;

• the basic principles of business operation on the Internet and directions for the promotion of SEO, SMM, PPC web resources;

• modern analytical information tools for substantiating managerial decision-making in digital business (open servicesGoogle Trends, Similarweb, Alexa, Semrush, Serpstat, Moz, Majestic, GemiusAudience, Seoquick for benchmarking);

• the functionality of specialized tools for web analysis by web analytics systemsGoogle Analytics Universal, Google Analytics 4 as wellseparate sections inGoogle Search Console, Google Ads and Facebook Ads);

be able:

• use tools for data generation;

• perform specific operations with data (export and import of data);

• applyPower Pivot (Excel), Data Studio, Power BI for web analysis and dashboard creation;

• import data, calculate KPIs and analyze the effectiveness of advertising campaigns in Googlesheets and Excel (Power Query).

Competence acquisition:

General competences (CG)

● ZK2-Ability to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology, use different types and forms of motor activities for active recreation and leading a healthy lifestyle.

● ZKZ- Ability to abstract thinking, analysis and synthesis.

● ZK4. Ability to learn and master modern knowledge.

● ZK5. Determination and persistence in relation to assigned tasks and assumed responsibilities.

● ZK11. Ability to work in a team.

● ZK12-Ability to communicate with representatives of other professional groups at different levels (with experts from other fields of knowledge/types of economic activity).

● ZK13-Ability to work in an international context

Professional competences of the specialty (SK)

- SK2. The ability to critically analyze and generalize the provisions of the subject area of modern marketing.
- SK3. The ability to use the theoretical provisions of marketing to interpret and predict phenomena and processes in the marketing environment.
- SK5. Ability to correctly apply marketing methods, techniques and tools.
- SK6. The ability to conduct marketing research in various areas of marketing activity.
- SK7. The ability to determine the impact of functional areas of marketing on the results of economic activity of market entities.
- SK8. Ability to develop marketing support for business development in conditions of uncertainty.
- SK9. The ability to use marketing tools in innovative activities.
- SK10. The ability to use marketing information systems in making marketing decisions and develop recommendations for improving their effectiveness.
- SK11. The ability to analyze the behavior of market subjects and determine the peculiarities of the functioning of markets.

Mandatory components - Program learning outcomes (PRL):

- PRN 2. Analyze and forecast market phenomena and processes based on the application of fundamental principles, theoretical knowledge and applied skills of marketing activities.
- PRN 3. Apply acquired theoretical knowledge to solve practical tasks in the field of marketing.
- PRN 4. Collect and analyze the necessary information, calculate economic and marketing indicators, substantiate management decisions based on the use of the necessary analytical and methodical tools.
- PRN 5. Identify and analyze the key characteristics of marketing systems of various levels, as well as the peculiarities of the behavior of their subjects.
- PRN 11. Demonstrate the ability to apply an interdisciplinary approach and perform marketing functions of a market entity.
- PRN 12. Demonstrate the skills of independent work, flexible thinking, openness to new knowledge, be critical and self-critical.
- PRN 13. To be responsible for the results of one's activity, to show the skills of entrepreneurial and managerial initiative.
- PRN 17. Demonstrate written and oral professional communication skills in national and foreign languages, as well as proper use of professional terminology.
- PRN18. Demonstrate responsibility in relation to moral, cultural, scientific values and achievements of society in professional marketing activities.

Elective components - Program learning outcomes (PLP):

- PRN 20. Demonstrate skills in developing the company's marketing policy.
- PRN 21 Demonstrate the ability to make independent decisions, develop a sufficient number of alternative options, choose optimal solutions and bear responsibility for their implementation.

- PRN 22. Demonstrate the ability to form a project team, assigning executors to ensure the achievement of project goals.
- PRN 23. To carry out a study of the international business environment, to analyze the situation on the world market of goods and services, to determine the peculiarities and marketing program of the enterprise's entry into foreign markets.
- PRN 24 Ability to form budgets, forecasts and evaluate elements of the marketing complex, choose optimal alternatives.
- PRN 25. Ability to find and evaluate new market opportunities and formulate business ideas, develop business plans.
- PRN 29. Set up targeted advertising, develop SMM strategies and use content marketing in SMM, manage brand reputation in key social networks.

3. **The program and structure of the academic discipline for:**

– full-time and reduced-time full-time education

Content module 1. Theoretical foundations of the formation of Internet analytics and its basic tools (introduction to web analytics)

Topic 1. Introduction to the web analytics ecosystem: role in business strategy formation

Topic 2. Competitive analysis of websites based on open digital business metrics. Goals, tasks, KPI of the web resource in the context of forming a business strategy. Their peculiarities of setting when using e-tools and conducting competitive analysis.

Topic 3. Analysis of the semantic core as a basis for the formation of Internet traffic and directions for the promotion of web resources

Topic 4. SEO features of web resources: Sitemap and technical audit for search engine optimization and organic traffic generation

Topic 5. SEO features of web resources: the role of Link Building for search engine optimization and the formation of organic traffic

Topic 6. Familiarity with analytics collection systems for websites: the basics of traffic data collection in Internet analytics, Google Tag Manager and data integration with Google Analytics

Topic 7. Familiarity with analytics collection systems for websites: Google Search Console for analyzing organic traffic, data integration with Google Analytics

Content module 2. Applied aspects of work in Internet analytics systems.

Topic 8-9. Google Analytics: basic principles of service operation and functionality settings

Topic 10. Analysis of the performance of the web resource and end-to-end analytics: data export, import and other useful functions for KPI calculation

Topic 11. Analysis of the effectiveness of the web resource and end-to-end analytics: features of KPI application for various web resources and the formation of end-to-end analytics

Topic 12. Business analysis and forecasting CRI of digital business: conceptual foundations of A/B testing and its necessity in business analysis, basic models and indicators for forecasting

Topic 13. Data analytics in Data Studio

Topic 14. Data analytics in Power VI

Topic 15. Features of monitoring the effectiveness of advertising campaigns and retargeting using Pixel

The structure of the academic discipline

Names of content modules and topics	Number of hours					
	everything	including				
		l	p	lips	ind.	s. r.
1	**2**	**3**	**4**	**5**	**6**	**7**
Content module 1. Theoretical foundations of the formation of Internet analytics and its basic tools (introduction to web analytics)						
Topic 1. Introduction to Internet analytics, the role in the formation of business strategy	10	2		2		6
Topic 2. Goals, tasks, KPI of the web resource in the context of business strategy formation. Their peculiarities of setting when using e-tools and conducting competitive analysis.	8	2		2		4
Topic 3. Analysis of the semantic core as a basis for the formation of Internet traffic and directions for the promotion of web resources	8	2		2		4
Topic 4. SEO features of web resources: Sitemap and technical audit for search engine optimization and organic traffic generation	10	2		2		6
Topic 5. SEO features of web resources: the role of Linkbulding for search engine optimization and the formation of organic traffic	10	2		2		6
Topic 6. Familiarity with analytics collection systems for websites: the basics of traffic data collection in Internet analytics, Google Tag Manager and data integration with Google Analytics	12	2		2		8
Topic 7. Familiarity with analytics collection systems for websites: Google Search Console for analyzing organic traffic, data integration with Google Analytics	12	2		2		18
Together according to content module 1	76	14		14		44
Content module 2. Applied aspects of work in Internet analytics systems.						
Topic 8-9. Google Analytics Universal: basic principles of service operation and functionality settings	18	4		4		20
Topic 10. Analysis of the performance of the web resource and end-to-end analytics: data export, import and other useful functions for KPI calculation	8	2		2		4
Topic 11. Analysis of the effectiveness of the web resource and end-to-end analytics: features of KPI application for various web resources and the formation of end-to-end analytics	10	2		2		6
Topic 12. Business analysis and forecasting CRI of digital business: conceptual foundations of A/B testing and its necessity in business analysis, basic models and indicators for forecasting	10	2		2		6
Topic 13. Data analytics in Data Studio	10	2		2		6
Topic 14. Data analytics in Power VI	12	2		2		8

Topic 15. Features of monitoring the effectiveness of advertising campaigns and retargeting using Pixel	10	2		2		16
Together according to content module 2	78	16		16		46
Only hours	180	30		30		120

4. Topics of seminar classes are not provided for in the curriculum.

5. Topics of practical classes are not provided for in the curriculum.

№ s/p	Topic name	Number hours
1.	Competitive analysis of the web resourcebased on open metrics: determination of conversions and KPI of a web resource for the formation of a business strategy.	2
2.	The main approaches in the formation of traffic sources of the web resource.UTM-labels	2
3.	Working with the semantic core	2
4.	Technical audit in the formation of traffic	2
5.	Link building in the formation of organic traffic	2
6.	Familiarity with Google Analytics, Google Tag Manager, Google Search Console. Setting up automated information collection Part 1 Development of your own site using the Google Sites designer and integration of traffic data using Google Tag Manager, Google Analytics Part 2 Introduction to Google Analytics, Google Tag Manager, Google Search Console	4
7.	Functionality settings in Google Analytics	4
8.	KPI of Internet resources: export and import of data, functionality for calculations, end-to-end analytics	4
9.	The simplest models for predicting the CRI of a digital business	2
10.	Analysis and visualization of data (on the example of Power BI and Data Studio).Building a Dashboard in Data Studio	4
11.	Features of monitoring the effectiveness of advertising campaigns: settings in Ads Manager and data integration	2

	Together	30

6. Topics of laboratory classes are not provided for in the curriculum.

1. Topics of independent work

№ s/p	Topic name	Number hours
1	Competitive analysis based on audience and technical metrics	14
2	SEO features of web resources: Sitemap and technical audit for search engine optimization and organic traffic generation	12
3	Familiarity with analytics collection systems for websites: the basics of traffic data collection in Internet analytics, Google Tag Manager, Google Ads, Google Analytics	26
4	Working with Google Analytics Universal	16
5	Data analysis and visualization in web analytics systems	14
6	Remarketing and analytics on websites and social networks. Features of monitoring the effectiveness of advertising campaigns and retargeting with the use of Pixel	16

2. Samples of control questions, tests to determine the level of knowledge acquisition by students.

List of questions for determining the level of knowledge acquisition by students

1. Key indicators for the formation of the company's business strategy.
2. Basic principles of business operation on the Internet and directions of promotion of web resources.
3. Offline and online conversions in digital business.
4. Goals and KPIs for the web project.
5. Concepts of ROI, ROMI, ROAS
6. Concepts of CAC, CPC, CPO, CPA, CPL, CPF, CTP,
7. Concepts of DRR, EPC, LTV, GM.
8. Methods and technologies of strategic business management.
9. Overview of the Business Model Canvas.
10. Traffic sources and principles of operation of search algorithms.
11. The concept of Googlebombing.
12. Technical and audience KPIs.
13. The role of cookies.
14. PPC, SMM and SEO in digital business.
15. Semantics, language building with Google Trends and Google KeyWord Planner.

16. Basics of competitive analysis based on website ratings by category.
17. Data collection tools Google Analytics, Google Tag Manager, Google Search Console, PageSpeed Insights and other special software.
18. Features of using external web analytics systems (Similarweb, SEMRUSH, Ahrefs, Serpstat, Alexa, Seotesteronline, Majesticseo).
19. Principles of construction and use of the structure of UTM tags.
20. Website technical audit and its impact on LTV.
21. Directions of internal and external website optimization.
22. Typical reports in web analytics systems.
23. Data import and export in Google Analytics, role of Google BigQuery.
24. Data integration and report creation in Google Data Studio.
25. Data integration and report creation in Power BI.
26. Data integration and report creation in Googlesheets.
27. Features of the Google Analytics API.
28. Special functions for data processing in Excel, Googlesheets and forecasting of CPI.
29. Mathematical basics of A/B tests: mathematical expectation, median, sampling distribution, variance, variation, statistical significance.
30. Conceptual basics of A/B testing
31. Stages of A/B testing
32. Balancing cost-effectiveness and accuracy of data collection: a conflict of interest.
33. An example of using A/B tests using Google Optimize.
34. Features of LTV and its applied aspects in social networks.
35. Facebook, Instagram, YouTube data collection options.
36. Typical reports in Facebook, Instagram, Youtube web analytics systems.
37. All the pros and cons of paid traffic in social networks.
38. Generalization of knowledge about the funnel of user goals.
39. Modern trends in digital business.
40. Areas of work of specialists in web analytics. Features of UX research.
41. Overview of advanced approaches in data analysis.
42. Hard and softskills of web analytics.
43. Digital (information) strategy: important aspects

An example of an examination ticket

<table>
<tr><td colspan="4">НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ БІОРЕСУРСІВ І ПРИРОДОКОРИСТУВАННЯ УКРАЇНИ</td></tr>
<tr><td>ОС <u>«Бакалавр»</u></td><td>Кафедра
<u>економічної кібернетики</u></td><td>Екзаменаційний білет №2

з дисципліни
<u>«Інтернет-аналітика»</u></td><td>ЗАТВЕРДЖУЮ
Зав. кафедри
_____
Д.М. Жерліцин
«___»_____ 20___ р.</td></tr>
<tr><td colspan="4">I. Тестове завдання (максимальна оцінка 10 балів за відповідь на кожне питання)</td></tr>
<tr><td colspan="4">Розміщене на ЕНК</td></tr>
<tr><td colspan="4">II. Розгорнута відповідь на теоретичне питання (максимальна оцінка 10 балів за відповідь на кожне питання)</td></tr>
<tr><td colspan="4">Джерела трафіку в інтернет аналітиці та принципи роботи пошукових алгоритмів.</td></tr>
<tr><td colspan="4">III. Розгорнута відповідь на практичне питання (максимальна оцінка 10 балів за відповідь на кожне питання)</td></tr>
<tr><td colspan="4">Визначте input та output задачі за за алітичними даними власного варіанту:
https://drive.google.com/drive/folders/1NAid4d_Sks8GHjpMODk7YdsO2ei0PPsi?usp=sharing

Сформуйте на основі визначених KPI dashboard в прикладному середовищі Data Studio та надайте його у вигляді посилання або звіту PDF</td></tr>
<tr><td colspan="4">ЕКЗАМЕНАТОР:

Ст.викладач Костенко І.С.</td></tr>
</table>

8. Teaching methods

In the process of teaching an educational discipline, according to the nature of cognitive activity, mainly gamification methods and explanatory and illustrative, heuristic methods are used, as well as partially each of the specified methods depending on the types of work in the lesson. (Table 1).

Table 1

Classification of teaching methods

Ambush	Name	Characteristics
1. Source of knowledge: word, image, experience	verbal, visual, practical	
2. Stages of training	preparation for learning new material, learning new material, consolidation of exercises, control and assessment	
3. Method of pedagogical guidance	teacher's explanation, independent work	management: direct; mediated
4. Teaching style (explanation)	informative and informative, explanatory, instructive and practical, explanatory and motivational	
4. Logic of learning	inductive, deductive, analytical, synthetic	
5. Didactic goals	organization of educational activities, stimulation and relaxation, control and evaluation	
6. Didactic tasks	methods of mastering knowledge, methods of forming abilities and skills, application of acquired knowledge, abilities and skills	
7. Nature of cognitive activity	explanatory-illustrative, reproducible problem statement, partially search (heuristic), research methods	reproductive Productive

The following teaching methods are used in the teaching of the academic discipline:
M1. Lecture (discussion, problematic),
M2. Lab,
M3. problem-based learning,
M4. Project training (individual, small groups, group),
M5. Online training.
Also, the following control methods are used when teaching the academic discipline:
MK1. Testing
MK2. Control task
MK3. Calculation work
MK4. Methods of oral control
MK5. Exam

9. Forms of control

Each of the forms of control has its own characteristics and depends on the purpose, content and nature of training. The following forms of control are used in the discipline learning process:

1. **Current control**: oral interview (individual, face-to-face, group), computer testing, performance of practical tasks on the computer according to the program;
2. **Final control**: testing and interview based on work results.

10. Distribution of points received by students.

The student's knowledge is assessed on a 100-point scale and translated into national assessments according to the table. 1 "Regulations on examinations and assessments at NUBiP of Ukraine" (approved by the Academic Council of NUBiP of Ukraine dated 04/26/2023, protocol No. 10)

Evaluation scale

Rating of a higher education applicant, points	**The assessment is national for the results of passing exams**	
	exams	**credits**
90-100	perfectly	counted
74-89	good	
60-73	satisfactorily	
0-59	unsatisfactorily	not counted

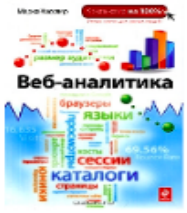
To determine the student's (listener's) rating for mastering the discipline$\mathbf{R_{DIS}}$(up to 100 points) the received rating from the certification (up to 30 points) is added to the rating of the student (student) from the academic work$\mathbf{R_{NO}}$(up to 70 points):$\mathbf{R_{DIS} = R_{NO} + R_{NAME}}$.

Current control		Academic work rating R_{NO}	Rating from additional work R_{DR}	The penalty rating is R_{SHTR}	Final certification ***(test)***	Total points
Content module 1	Content module 2					
0-100	0-100	0-70	0-20	0-5	0-30	0-100

11. Methodological support

The electronic training course, developed on the basis of the LMS Moodle platform, is posted on the educational portal of NUBiP of Ukraine.

12. Recommended literature



Веб-аналітіка. Марк Хасслер. 2010

Веб-аналітика 2.0 на практиці. Тонкощі і кращі методики. Авінаш Кошик. 2012

Веб-аналитика: аналіз інформації про відвідувачів веб-сайтів. Авінаш Кошик. 2010

«Google Analytics для профессионалов» от Брайана Клифтона

«Google BigQuery. Всё о хранилищах данных, аналитике и машинном обучении» от Вальяппа Лакшманана и Джордана Тайджани

«Google Tag Manager для googлят» от Якова Осипенкова

«Google Analytics 2019: Полное руководство» от Якова Осипенкова

«Google Analytics Thir Edition Joe Teixeira» from L. Ledford and Mary Tyl

Basic

3. Avinash Kaushik, "Web Analytics 2.0 in practice"
4. Avinash Kaushik, "Web analytics: Analyzing information about website visitors"
5. Alistair Kroll, Sean Power. Comprehensive web monitoring
6. Anton Petrochenkov. Introduction to Google Analytics
7. Brian Clifton, Google Analytics for Professionals
8. Ingate. Google Analytics. A detailed practical guide
9. Ingate. Consumer psychology: who buys what and how online
10. Ingate. Comprehensive web analytics: new life for your site
11. Ingate, "How to Sell More: Google Analytics for an Online Store"
12. Valiapp Lakshmanan and Jordan Taijani, Google BigQuery. All about data warehouses, analytics and machine learning»
13. Jerry L. Ledford and Mary Tyler, "Google Analytics Third Edition Joe Teixeira"
14. Marco Hassler, Web Analytics
15. Tim Ash. Increasing the effectiveness of Internet advertising. Optimizing landing pages to improve conversion
16. Yakov Osipenkov, Google Analytics 2019. The Complete Guide
17. Yakov Osipenkov, Google Tag Manager
18. Yakov Osipenkov, Using Google Analytics with R (Michal Brys)
19. Yatsyuk S. M. Web analytics and search engine optimization: a course of lectures. 51 p.
20. Yatsyuk S. M. Web analytics and search engine optimization. Methodical recommendations for studying the discipline
21. Klymenko N.A., Kostenko I.S. Methodological recommendations for studying the discipline "Web Analytics" of NUBiP (planned for 2023).

Auxiliary

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3. Osterwalder Oleksandr, Yves Pignier. Building business models. The table book of a strategist and innovator

4. Jamshid Garaedagi. Systems thinking. How to manage chaos and complex processes. A platform for modeling business architecture

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7. Ethan M. Rasiel, Paul N. Phrygii. McKinsey tools. Best practice for solving business problems

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9. Carl Anderson. Analytical culture

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11. Rhonda Abrams. Business plan for 100%: Strategy and tactics for effective business / Rhonda Abrams; Per. from English. - M.: ALPINA PUBLISHER, 2014 - 486s.

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15. Modernization of financial systems: methodology and management tools / Yu.G. Lysenko; N.S. Pedchenko; V.M. Kravchenko; V.V. Mandra; M.O. Myznikov; V.M. Berlin; V.M. Lev et al. / Under the editorship member of the cor. NAS of Ukraine, Dr. Econ. Sciences, Prof. Yu.G. Lysenko; Dr. Econ. of Science, Assoc. Zherlitsyna D.M. - Poltava, 2017. - 348 p.

16. Gruber Y. Econometrica / I. Gruber. - Kyiv: Nichlava, 1998. - Volume 1: Introduction to multiple regression and econometrics. - 384 p.

17. Dudko V.S. Economic and mathematical modeling: a study guide for students. higher taught incl.: in 2 parts 4:1. / V.S. Dudko, T.D. Krasnova, V.V. Lagovskyi.- Irpin: NUDPSU, 2010.-448 p.

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