Syllabus

Information Technology for Modeling and Forecasting in International Management

Higher education degree – master degrees
Field of knowledge – 07 Management and Administration
Specialty – 073 Management
Educational and scientific program – "International Management"

Year of study: 1,
Semester: 2
Number of credits ECTS: 4
Language of teaching: English

Course Leader

PhD, Associate Professor **Olha Kovalchuk**

Contact Information o.kovalchuk@wunu.edu.ua

Description of the discipline

The discipline "Information Modeling and Forecasting Technologies in International Management" introduces students to the possibilities of applying analytical methods and computer models in the practice of researching trends in the development of international business processes to establish relationships between international business entities, identify non-obvious resources and opportunities for interaction in the international business environment, forecasting future states and testing hypotheses about probable scenarios of situation development and possible action strategies.

In the process of studying the educational discipline "Information technologies of modeling and forecasting in international management", students develop the skills of rational choice of research methods of processes and trends of the international business environment; the ability to use computer models to study the interrelationships of international business participants, modeling and forecasting of international business processes to support the adoption of effective management decisions. The ability to use modern application software for modeling and forecasting the development of events, and phenomena and identifying non-obvious relationships in the international business environment will increase the competitiveness of future specialists in the labor market.

Course Structure

Hours (lect. / pract. class)	Topic	Results of the study	Tasks
4 / 2	1. General principles of modeling trends in international markets and resources	Know the basic provisions of modeling and forecasting of global processes, understand the nature of international situations and processes, be able to collect relevant analytical information from official sources, and formulate analytical conclusions in the form of predictive assumptions	questions, practical tasks on building a computer model using Statistica
2 / 2	2. Analysis of international business factors	Know the methodology of causal analysis, be able to identify and assess statistically significant relationships between factors, and possess practical skills in applying factor analysis methods to search for predicted latent patterns caused by the influence of external or internal factors of the modern business environment	questions, practical tasks on building a computer model using Statistica

2 / -	3. Basic models of international management	Know the features and principles of application of international management models: international model; multinational model; global model; and transnational model, and be able to determine the goals of business process management models	questions, practical tasks
2 / -	4. Models of conflict situations in the international business environment	Know the components of a conflict situation and features of the description of the general model of a conflict situation models in the international business environment	questions, practical tasks
2 / -	5. Main aspects of forecasting the state of the international business environment	Possess basic concepts of foresight, forecasting, and planning, know the basic principles of forecasting, and be able to classify forecasts	questions, practical tasks
4 / 2	6. Regression analysis of factors of international business processes	Possess basic concepts of regression analysis, be able to determine the strength of the relationship between the dependent variable and independent factors, evaluate the significance of the regression equation, acquire skills to apply IT tools for building computer models, be able to formalize regression models and analyze the results obtained	questions, practical tasks on building a computer model using SPS Statistica
2 / 2	7. Time series for analyzing trends in the international business environment	Be able to distinguish the trend, seasonal, and cyclical components of a dynamic series; calculate the numerical characteristics of time series using computer technologies; have practical skills in applying the graphical method for time series analysis using application packages	questions, practical tasks on building a computer model using Statistica
2 / 2	8. Data Mining technologies for managing relationships with international clients	Know modern technologies of intellectual data analysis, which are used to develop a competitive advantage in the international market, be able to apply the tools of intelligent data analysis to determine valuable information about customers, predict the behavior of participants in the international business environment, and to support decision-making regarding international business management	questions, practical tasks on building a computer model using Statistica
4 / 2	9. Big data in innovative management	Know the capabilities of applying Big Data technologies for predictive analytics and customer relationship management, possess specialized knowledge and skills in targeted email campaigns and analyzing consumer interests on the Internet	questions, practical tasks on building a computer model using Statistica
2 / 3	10. Text Mining in business risk management	Know the main tasks, techniques, and possibilities of applying Text Mining technologies for business risk management, be able to apply intellectual text analysis in practice to classify text documents and obtain information about industry trends or international financial markets	questions, practical tasks on building a computer model using Statistica
4 / -	11. Information technologies to support decision-making in international management	Know the specifics of using information technologies to support effective decision-making, to have practical skills in the use of application programs to build decision-making support models	questions, practical tasks

RECOMMENDED SOURCES OF INFORMATION

1. Mgunda M. The Impacts Information Technology On Business. Vol. 2(3) Journal of International Conference Proceedings. Conference: Proceedings of the 5th International Conference of Project Management (ICPM) Yogyakarta, Indonesia, 2019. URL : https://www.researchgate.net/publication/344041201_The_Impacts_Information_Technology_On_Business.
2. Brooke C. The Importance of Information Technology In Business Today. Business Community, 2023. URL : https://www.business2community.com/tech-gadgets/importance-information-technology-business-today-01393380.
3. LaMarco N. Information Technology & Its Uses in Business Management. CHRON, 2018. URL : https://smallbusiness.chron.com/information-technology-its-uses-business-management-51648.html.

4. Shen C.-C., Yeh C.-C., Lin C.-N. Using the perspective of business information technology technicians to explore how information technology affects business competitive advantage. Technological Forecasting and Social Change. 2022. Vol. 184. 121973. URL : https://www.sciencedirect.com/science/article/abs/pii/S0040162522004942/

5. Tang L. et al. Big Data in Forecasting Research: A Literature Review. Big Data Research, 2022. Vol. 27. 100289. URL : https://www.sciencedirect.com/science/article/abs/pii/S2214579621001064.

6. Time-Critical Decision Making for Business Administration. URL : home.ubalt.edu/ntsbarsh/stat-data/forecast.htm.

7. INTRODUCTION TO OPERATIONS MANAGEMENT: Forecasting. URL : https://pressbooks.senecacollege.ca/operationsmanagement/chapter/forecasting/.

8. Metternich Nils W., Gleditsch K., Dworschak C. Forecasting in International Relations. Oxford Bibliographies, 2021. URL : https://www.oxfordbibliographies.com/.

9. Kovalchuk O. et al. Decision-Making Supporting Models Concerning the Internal Security of the State. INTL Journal of Electronics Telecommunications, 2023, Vol. 69, no. 2, pp. 301–307.

10. Kovalchuk O. et al. Decision Support Model Based on the Analysis of International Security Risks and Threats. Chapter in monograph: Przetwarzanie, transmisja i bezpieczeństwo informacji. Wydawnictwo Naukowe Akademii Techniczno-Humanistycznej w Bielsku-Białej, 2022. pp. 57–70.

11. Kovalchuk O. et al. Text Mining for the Analysis of Legal Texts. Proceedings of the 12th International Conference on Advanced Computer Information Technologies (ACIT-2022), pp. 502–505.

12. Berezka K., Kovalchuk O. et al. Binary Logistic Regression Model for Support Decision Making in Criminal Justice. Folia Oeconomica Stetinensia. 2022. Vol. 22 (1), pp. 1–17.

13. Stream Processing: Instant Insight Into Data As It Flows. E-book. URL : https://hazelcast.com.

14. Advani V. Data Mining in Business Analytics 101 – The Ultimate Guide. 2022. URL : https://hevodata.com/learn/data-mining-in-business-analytics/.

Evaluation policy

- **Deadline and retake policy:** Modules are retaken with the permission of the dean's office if there are good reasons (for example, sick leave).
- **Academic Integrity Policy:** cheating during tests and exams is prohibited (including using mobile devices).
- **Visiting policy:** Attending classes is a mandatory component of the assessment. For objective reasons (for example, illness, international internship, and other reasons), training can take place online with the permission of the university administration.

Evaluation

The final score for the course is calculated as follows:

Content Module 1	Content Module 2	Content Module 3	Content Module 4 (Exam)
1. Current evaluation (5 topics for 10 points each) = 50 points 2. Practical task = 50 points	1. Current evaluation (6 topics for 10 points each) = 60 points 2. Written work = 40 points	1. Preparation and protection of CPIT - max. 80 points 2. Performance of tasks during training - max. 20 points	1. Theoretical question 1 (30 points) 2. Theoretical question 2 (30 points) 3. Practical task (40 points)

Rating scale:

University Scale	The National Scale	Scale ECTS
90–100	fine	A (excellent)

85-89	well	B (very good)
75–84		C (good)
65–74	satisfactorily	D (satisfactorily)
60-64		E (enough)
35–59	unsatisfactorily	FX (unsatisfactory with the possibility of reassembly)
1–34		F (unsatisfactorily with the mandatory repeated course)