Description of Discipline

Title of Discipline: ***Fundamentals of Systems Theory***					
Semester	Duration	Type of Discipline	ECTS Credits	Academic Workload	Language of Instruction
1	90 hrs.	compulsory	3	30 hours of classroom training, 60 hours of self-study	Ukrainian

Learning Outcomes	Teaching Methods	Evaluation Methods
LO2. To understand the principles of economic science, especially the operation of economic systems.	Lectures, taking notes, presentation, watching videos, practical classes where students solve problem educational tasks	Oral and Written evaluation, final tests, pass-fail test
LO8. To explain models of social-economic phenomena from the point of view of fundamental principles and knowledge based on understanding the basic directions of economic science development.	Lectures, taking notes, presentation, watching videos, practical classes where students solve problem educational tasks and participate in discussions	Oral evaluation, graphic methods, abstracts and reports, pass-fail test
LO16. The ability of abstract thinking, analysis and synthesis to identify key characteristics of economic systems of different levels as well as behavior features of their business entities.	Practical classes, exercises, problem educational tasks and presentation	Individual and combined evaluation, colloquium, essays, presentations, pass-fail test

Title of Discipline / **Fundamentals of Systems Theory**				
Semester	**Duration**	**Type of Discipline**	**ECTS Credits**	**Student Workload**
1	150 hrs.	mandatory	5	40 hours of teaching, 110 hours of self-study

Requirements for Participation	**Type of examination (oral, written, term paper, etc.)**	**Methods of teaching and learning (lectures, seminars, etc.)**	**Discipline Coordinator**
Complete general secondary education	Pass-fail test	Lectures, practical classes	O. Drozd

Learning Oucomes
GC4. Ability to apply knowledge in practical situations.

GC5. Ability to communicate in the state language both orally and in writing.
GC7. Skills in the use of information and communication technologies.
GC8. Ability to search, process and analyze information from various sources.
GC9. Ability to adapt and act in a new situation.
GC11. Ability to make informed decisions.

SC1. Ability to show knowledge and understanding of the problems of the subject area, the basics of the modern economy at the micro, meso, macro and international levels.
SC4. Ability to explain economic and social processes and phenomena on the basis of theoretical models, analyze and interpret the results.
SC7. Ability to use computer technology and data processing software to solve economic problems, analyze information and prepare analytical reports.
SC10. Ability to use modern sources of economic, social, managerial, accounting information for the preparation of official documents and analytical reports.
SC11. Ability to substantiate economic decisions on the basis of understanding the laws of economic systems and processes and using modern methodological tools.

PLO2. Understand the principles of economics, features of economic systems.
PLO8. Explain the models of socio-economic phenomena in terms of fundamental principles and knowledge based on an understanding of the main directions of development of economics.
PLO16. Be able to think abstractly, apply analysis and synthesis to identify key characteristics of economic systems at different levels, as well as the behavior of their subjects.
PLO17. Demonstrate flexibility and adaptability in new situations, in working with new objects, and in uncertain conditions.
PLO31. Master the skills of oral and written professional communication in state and foreign languages.
PLO35. Discuss, explain, reproduce the results of their research, decisions.
PLO36. Ability to present and discuss the results obtained and transfer the acquired knowledge.
PLO38. Show skills of independent work, demonstrate critical, creative, self-critical thinking.
PLO41. Ability to treat the work responsibly and achieve the goal in compliance with the requirements of professional ethics.

Contents

MODULE 1. FUNDAMENTALS OF SYSTEMS MODELING

Topic 1. Introduction

The main objectives of the course. Structure of the course. Exemplary literature on the discipline. Terms and definitions. The concept of the system.

Topic 2. Systems theory. System. Classification of systems

The concept of the system
Complex of solved problems
System as an object of research
Classification of systems

Topic 3. Systems modeling

Systems life cycle
Systems modeling
Scales of measurement

MODULE 2. SYSTEM ANALYSIS

Topic 4. Basics of system analysis

Methods of system analysis
Problems of system analysis
Objects and systems
Topic 5. System analysis in economics and management
Features of economic systems
System analysis in management

Exemplary Literature

Primary

1. Peregudov F.I., Tarasenko F.P. Introduction to systems analysis. -M .: Higher. school, 1989. - 367 p.
2. Lyamets V.I., Tevyashev A.D. System analysis. Introductory course. - 2nd ed. - Kharkiv: KhNURE, 2004. - 448 p.
3. Luger J.F. Artificial intelligence: strategies and methods for solving complex problems, 4th edition.- M .: Publishing House "Williams", 2003.- 864 p.

Supplementary

1. Valueva S.A. System analysis in economics and organization of production: manual. - L .: Polytechnic, 1991. - 398 p.
2. August - Wilhelm Scheer. Business Process Modeling / Translated. from English - M .: OAO Best-Meta Technology 2000. -205 p.
3. Mirotin L.B., Tashbaev I.E. System analysis in logistics: Textbook. - M .: Ekzamen, 2002. - 480 p.

Web resources

1. Scientific Library of Chernihiv Polytechnic National University. [Electronic resource]. - Access mode: http://library2.stu.cn.ua/
2. Distance learning site of CPNU. [Electronic resource]. - Access mode: http://eln.stu.cn.ua/login/index.php.
3. On-line library. [Electronic resource]. - Access mode: http://citforum.ru/.

Academic staff

Name	Academic degree	Position	Qualification / Academic Discipline	Full-time / Part-time	Area of Teaching
Drozd Oleksandr Petrovych		Senior Lecturer at the Department of Computer Science and Computer Systems	Kyiv Internationa University of Civil Aviation (1996), specialty – computerized information processing and control systems, qualification – systems engineer	0,35	Computer Science, Fundamentals of Systems Theory