



Economics and organization of production

Working program of basic discipline (Silabus)

Requisites for basic discipline

Level of higher education	<i>First (bachelor's)</i>
Branch of knowledge	<i>16 Chemical and Bioengineering</i>
Specialty	<i>163 Biomedical Engineering</i>
Educational program	<i>Medical Engineering</i>
Discipline status	<i>Mandatory discipline</i>
Form of study	<i>full-time / day / mixed / remote</i>
Year of preparation, semester	<i>4th course, spring semester</i>
The scope of discipline	<i>4 ECTS credits / 120 hours</i>
Semester control / Control measures	<i>Test, Modular Test Work, Project Work</i>
Lessons schedule	<i>According to the schedule on the site http://rozklad.kpi.ua/</i>
Language of instruction	<i>English</i>
Information about course leader / teachers	<i><u>Lecturer:</u> Eugenia A. Udovytska, PhD in economics, Associate Professor, e-mail: evanudov@ukr.net</i>
Course placement	<i>https://classroom.google.com/u/0/c/MjUyNzg0NjYyNTY2</i>

Distribution of hours

Semester	Lectures	Practical	Independent Work
<i>spring semester</i>	<i>36</i>	<i>36</i>	<i>48</i>

Curriculum of the discipline

1. Description of the discipline, its purpose, subject of study and learning outcomes

Economics and organization of production is the course concerned with the study of relevant economic concepts and principle of Business, different functions responsible for creating, design, manufacturing and sell the goods and services. This course discusses the economic and financial aspects of enterprising behaviours, strategic planning organization; production and operations management.

The goal is to provide students with an understanding of basic components of economic and production system, basis of innovative enterprise, principles of production location and plant layout, production planning and control.

General competencies (OPP was put into effect by the Rector's Order NON/ 89/2021 of 19.04.2021):

GC 1- Ability to apply knowledge in practical situations.

GC 2- Knowledge and understanding of the subject area and understanding of professional activity.

GC 3- Ability to communicate in the state language both orally and in writing.

GC 4- Skills in the use of information and communication technologies.

GC 5- Ability to perform research at the appropriate level.

GC 6- Ability to search, process and analyze information from various sources.

GC 7- Ability to generate new ideas (creativity).

GC 8- Ability to make well-grounded decisions.

GC 9- Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity).

GC 10- Safe activities skills.

GC 11- Ability to evaluate and ensure the quality of work performed.

GC 12 - The ability to realize their rights and responsibilities as a member of society, to appreciate the values of civil (free democratic) society and the need for its sustainable development, the rule of law, rights and freedoms of human and of Ukraine's citizen.

The program learning outcomes after studying the discipline «Economics and organization of production» are (OPP was put into effect by the Rector's Order NON/ 89/2021 of 19.04.2021):

PLO 26 - Management of complex actions or projects that require engineering decisions in unpredictable conditions.

2. Prerequisites and postrequisites of the discipline (place in the structural and logical scheme of education according to the relevant educational program)

The discipline " Economics and organization of production" belongs to the cycle of general training and enhances interdisciplinary synergistic effect. It integrates according to its subject knowledge from other disciplines: Environmental management, Business law. This discipline is a useful fundamental element to develop the ability to analyse, critically, economic decisions and provides a basis for further preparing to Pre-diploma practice and Diploma design.

3. The content of the discipline

The main sections and topics that will be considered in the process of studying the course:

Section 1. Economic concepts and systems

Subject 1.1. Basic Economic Concepts. Basic Economic Questions

Subject 1.2. Types of Economic Systems.

Section 2. Principle of Business and enterprising behaviours of companies.

Subject 2.1. The Nature of Business. Types of Entrepreneurs

Subject 2.2. How Business and Economics Work

Subject 2.3. Understanding the Business Environment

Subject 2.4. Economic welfare and producer and consumer surplus

Section 3. The Factors of Production.

Subject 3.1. Land or Natural Resources

Subject 3.2. Labor or Human Resources

Subject 3.3. Capital

Subject 3.4. Entrepreneurship

Section 4. Production and Productive Resources.

Subject 4.1. Money and Financial Resources

Subject 4.2. Human and Employment

Subject 4.3. Capital and Equipment

Subject 4.4. Informational Resources and Technical Knowledge

Section 5. Production system.

Subject 5.1. Production system: The Heart of an Organisation. Classifications of production systems

Subject 5.2. Production processes

subject 5.3 Production and Manufacturing operations and Service Operations.

Section 6. Production and process design

Subject 6.1. Organisational characteristics of process design

Subject 6.2. Organisation of the new product production

Section 7 Entrepreneurship: Starting and Managing Your Own Business

Subject 7.1 Characteristics of Successful Entrepreneurs

Subject 7.2 Developing the Business Plan

Subject 7.3 Financial Results Management

4. Training materials and resources

Basic literature:

1. *Organisation of production: lectures [Electronic Resource]: Manual for foreign students' specialty 051 "Economics", "International Economics" specialization of «Bachelor» educational degree in full-time education / National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"; concluding: Pavlenko Tetiana, Udovytska Eugenia – Electronic text data (1 file: 4 MB). – Kyiv: National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", 2021. - 96 p. - Screen name.*
2. *Introduction to Business[Electronic Resource]:: Adapted for Seneca, BAM101 is licensed under a Creative Commons Attribution-Non-Commercial 4.0 International license, except where otherwise noted. <https://pressbooks.senecacollege.ca/introbusinessbam101/front-matter/acknowledgements/>*
3. *Nada Sanders (2014) The definitive guide to manufacturing and service operations masters the strategies and tactics for planning, organizing, and managing how products and services are produced Lehigh University, Council of Supply Chain Management Professionals, Published by Pearson Education, Inc. <https://ptqmedia.pearsoncmg.com/images/9780133438642/samplepages/0133438643.pdf>*
4. *Dr. Ullas Chandra Das Dr. Ajit Kumar Mishra (2019) Production and Operation Management, Directorate of distance & continuing education, Utkal University, Bhubaneswar-7, Odisha <https://ddceutkal.ac.in/Syllabus/MBA-BOOK/Production-Operation-Management.pdf>*
5. *S. Anil Kumar & N. Suresh (2008) Production and Operations Management 2d edition, New age international (p) limited, publishers https://www.academia.edu/23992923/Production_and_Operations_Management_2nd_Edition_by_S_Anil_Kumar_and_N_Suresh*
6. *K. Shridhara Bhat (2011) Production and operations management, Himalaya Publishing House <http://www.himpub.com/documents/Chapter911.pdf>*

Additional literature:

7. *Roger Perman, Yue Ma, Michael Common, David Maddison and James McGilvray, "Natural Resource and Environmental Economics", Pearson Education/Addison Wesley, 4th edition, 2011.*
8. *Paul R. Krugman, Maurice Obstfeld and Marc Melitz, International Economics, Pearson Education Asia, 9th edition, 2012.*
9. *N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.*

Educational content

5. Methods of mastering the discipline (educational component)

№ s/n	Subject	Program learning outcomes	The main tasks	
			Control measure	Deadline
1.	Basic Economic Concepts. Basic Economic Questions	PLO26	Practical work 1	1-2nd week
2.	Types of Economic Systems	PLO26	Practical work 2	3rd week
3.	Principle of Business and enterprising behaviours of companies.	PLO26	Practical work 3	4th week
4.	The Nature of Business. Types of Entrepreneurs	PLO26	Practical work 4	5th week
5.	How Business and Economics Work. Understanding the Business Environment	PLO26	Practical work 5	6-7th week
6.	The Factors of Production.	PLO26	Practical work 6	8th week
7.	Money and Financial Resources	PLO26	Practical work 7	9th week
8.	Human and Employment	PLO26	Practical work 8	10th week
9.	Capital and Equipment	PLO26	Practical work 9	11th week
10.	Informational Resources and Technical Knowledge	PLO26	Practical work 10	12th week
11.	Production system: The Heart of an Organisation Classifications of production systems	PLO26	Practical work 11	13th week
12.	Production processes Production and Manufacturing operations and Service Operations	PLO26	Practical work 12	14th week
13.	Production and process design	PLO26	Practical work 13	15th week
14.	Financial Results Management	PLO26	Practical work 14	16th week
15.	Project work Business Plan	PLO26	Registration and submission of work	17-18th week

6. Independent student work

One of the main types of semester control during the mastering of the discipline "Economics and organization of production" is the implementation of project work - "Developing the Business Plan". The project work is performed in accordance with the requirements, within the period specified by the teacher.

The main purpose of project work is to solve a practical problem using the material learned in lectures and independently, and practical skills acquired in practical work. The student can have the project work only on the subject agreed with the teacher.

The title page of the project work should have the following content: the name of the university; name of the faculty; name of department; name of specialty, name of educational-professional program, name of academic discipline; theme of calculation and graphic work; surname and name of the student, course, number of the academic group, year.

The title page is followed by a detailed plan (content) of the project work, which should highlight the introduction, sections of the main content (main topics studied), their subdivisions (if necessary), conclusion, list of sources used. The table of contents on the right indicates the page numbers at the beginning of each question. Each section begins on a new page.

The total amount of project work, depending on the chosen topic can vary from 12 to 15 pages of the main text (in consultation with the teacher). The amount of project work is determined by the student's ability to briefly and at the same time comprehensively explain and analyze the business environment.

Mandatory requirement: clear reference to sources of information. All figures, facts, opinions of scientists, quotations, formulas should have a reference in the form [2, p. 54] (the first digit means the number of the source in the list of references given at the end of the creative work, and the second digit - the page number in this source). It is desirable to use tables, diagrams, graphs, charts, etc. The list of used sources (not less than 10 sources) is made out according to operating rules. If the information is taken from the Internet, you need, as for ordinary literature, specify the author, the title of the article, and then provide the address of the site on the Internet.

The project work is evaluated by the following criteria: logic of the plan; completeness and depth of topic disclosure; reliability of the received data; reflection of practical materials and results of calculations; correctness of formulation of conclusions of the received results and conclusions; design; substantiation of the student's own opinion on this issue in the form of a conclusion.

Deadline for submission of project work for verification: 17-18th week of study.

The project work is not tested for plagiarism, but must meet the requirements of academic integrity. In case of academic dishonesty, the work is canceled and not checked.

Policy and control

7. Policy of academic discipline (educational component)

Attending classes

Attendance at lectures is optional. Attending practical classes is desirable, as they are used to write express tests / tests, as well as to defend practical work.

The grading system is focused on obtaining points for student activity, as well as performing tasks that are able to develop practical skills and abilities.

Control measures missed

Missed control measures (defense of practical work) must be practiced in the next classes, provided that the task is scheduled for the current lesson, or in consultations.

Omissions of writing a module test and express test are not fulfilled.

Calculation and graphic work, which is submitted for inspection in violation of the deadline is evaluated with a decrease in the number of weight points.

Incentive points

<i>Encouragement points</i>	
<i>Criterion</i>	<i>Weight points</i>
<i>Improving practical work</i>	<i>1 points (for each practical work)</i>
<i>Passing distance courses on topics that are agreed with teachers</i>	<i>5 points</i>
<i>Registration of scientific work for participation in the competition of student scientific works</i>	<i>10 points</i>
<i>Writing abstracts, articles, participation in international, national and / or other events or competitions on the subject of the discipline</i>	<i>10 points</i>

Academic integrity

The policy and principles of academic integrity are defined in Section 3 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Read more: <https://kpi.ua/code>.

Norms of ethical behavior

Normative principles of behavior of students and employees, defined in sections 2 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Read more: <https://kpi.ua/code>.

Procedure for appealing the results of control measures

Students have the opportunity to raise any issue related to the control procedure and expect it to be addressed according to predefined procedures.

The student has the right to appeal the results of the control measure according to the approved provision on appeals in the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (approved by the order №NON/128/2021 from 20.05.2021) - <https://osvita.kpi.ua/index.php/node/182>

Inclusive education

The discipline "Economics and organization of production" can be taught to most students with special educational needs, except for students with severe visual impairments who do not allow to perform tasks using personal computers, laptops and / or other technical means.

Distance learning

Distance learning takes place through the system "Electronic Campus" and Google classroom <https://classroom.google.com/u/0/c/MjUyNzg0NjYyNTY2>

Distance learning through additional online courses on certain topics is allowed subject to agreement with students. If a small number of students wish to take an online course on a specific topic, studying the material with such courses is allowed, but students must complete all the tasks provided in the discipline.

The list of courses is offered by the teacher after the students have expressed a desire (because the bank of available courses is updated almost every month).

The student provides a document confirming the completion of the distance course (in the case of a full course) or provides practical tasks from the distance course and subject to an oral interview with the teacher on the topics can receive grades for control measures provided for the studied topics (express control / test tasks, practical work).

Performance of practical works, and also performance of settlement and graphic work, is carried out during independent work of students in a remote mode (with a possibility of consultation with the teacher through e-mail, social networks).

Learning a foreign language

Teaching in English is carried out only for foreign students.

At the request of students, it is allowed to study the material with the help of English-language online courses on topics that correspond to the topics of specific classes.

8. Monitor and evaluate the system of evaluation of learning outcomes (Rating System of Evaluation)

Evaluation system (current control):

No s/n	Control measure	%	Weight points	Number	Total
1.	Express control works / test tasks	20	10	2	20
2.	Execution and test of practical works	40	5	8	40

3.	Modular control work (MCW)	15	15	1	15
4.	Project work	25	25	1	25
5.	Test work ¹	75	75	1	75
<i>Total</i>					100

Calendar control (CC) - is performed twice a semester as monitoring of the current state of compliance with syllabus requirements.

The purpose of calendar control is to improve the quality of student learning and monitor the implementation of the schedule of the educational process by students.

Criterion		The first CC	The second CC	
Deadline of calendar controls		8th week	14th week	
Current rating		≥ 24 points	≥ 42 points	
Conditions for obtaining a positive result from the calendar control	Execution practical work	PWN№ 1- 5	+	
		PWN№ 6-12	-	
	Express control works / test tasks	At least 4 of any lectures	+	-
		At least 8 of any lectures	-	+
	Modular control work Project work	Estimated MCW	-	+
		Estimated CGW	-	-

In case of detection of academic poor quality during training - the control measure is not credited.

Semester certification of students

Mandatory condition for admission to the test		Criterion
1	Current rating	RD ≥ 42
2	Obtaining a positive assessment for the performed project work	More than 15 points
3	All practical works are tested	More than 14 points

The results are announced to each student separately in the presence or remotely (by e-mail or Telegram). Also recorded in the system "Electronic Campus".

Optional conditions for admission to closure:

1. Activity in practical classes.
2. Positive result of the first attestation and the second attestation.
3. Attending 50% of lectures.

Table of translation of rating points to grades on a university scale:

Number points	Assessment on the university scale
100-95	Perfectly / Відмінно
94-85	Very good / Дуже добре
84-75	Good / Добре
74-65	Satisfactorily / Задовільно
64-60	Enough / Достатньо
Less 60	Unsatisfactorily / Незадовільно
Admission conditions are not met	Not allowed / Не допущено

¹ Taken into account in the amount of the rating together with the grade for CGW in case the student has not scored 60 points per semester or he wants to improve his grade.

9. Additional information on the discipline (educational component)

The list of questions for preparation for modular control work, and also for preparation for credit is given in appendix 1.

Distance learning through additional online courses on certain topics is allowed subject to agreement with students. If a small number of students wish to take an online course on a specific topic, studying the material with such courses is allowed, but students must complete all the tasks provided in the discipline.

The list of courses is offered by the teacher after the students have expressed a desire (because the bank of available courses is updated almost every month).

The student provides a document confirming the completion of the distance course (in the case of a full course) or provides practical tasks from the distance course and subject to an oral interview with the teacher on the topics can receive grades for control measures provided for the studied topics (express control / test tasks, practical work).

Work program of the discipline (syllabus):

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Approved by the Department of Theoretical and practical economy (protocol № 1 to 31.08.2020)

Approved by the Methodical Commission of the Faculty of Biomedical Engineering(protocol № __ to _____)

The list of questions for preparation for modular control work,

And also for preparation for test

1. The Nature of Business. Types of Entrepreneurs
2. Types of production function
3. The primary functions of all organizations
4. Types of transformation, focuses on the physical creation of products.
5. Factors considered as basis of reliability for demand forecasting in multiple regression
6. Measures used as an performance criteria of production planning and control system
7. Plant locations and layout;
8. Types of operations-related activities in organizations
9. Budgeting and its elements
10. Advertising and promotion the products
11. Designing the goods
12. Principles of layout of the maintaining equipment
13. Capital and its elements
14. The main role of the financial resources in the economic system
15. Planning of production
16. Production control
17. Cost and expenses
18. Revenue of the company
19. Product output and quality
20. Investment in enterprises
21. Basics of price formation of enterprise products.
22. Economic content and price functions.
23. The impact of product quality and demand on pricing.
24. Classification of prices.
25. Pricing strategies in market conditions.
26. Types and structure of prices for industrial and scientific and technical products.
27. Prices and tariffs for energy, their features.
28. State regulation of prices.
29. Human resources and HR management tasks
30. Motion system
31. The content and functions of wages. Forms of remuneration.
32. Remuneration systems.
33. Tariff system of remuneration of workers and management staff.
34. Calculation of earnings of workers in various forms and systems of remuneration.
35. Material incentives for staff.
36. Remuneration fund of the enterprise
37. The essence and main tasks of the financial activity of the enterprise.
38. Indicators for assessing the financial condition of the enterprise.
39. Features of profit formation of the enterprise, factors of its growth.
40. Types of enterprise profit.
41. Sources of formation and distribution of profits in enterprises of various forms of ownership.
42. Indicators and factors to increase production efficiency.