

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF
UKRAINE**

Department of Production and Investment Management

APPROVED

Faculty of Agricultural Management

“15” June 2026

CURRICULUM OF ACADEMIC DISCIPLINE
«PRODUCTION SYSTEMS MANAGEMENT»

| | |
|---|--|
| Area of knowledge | <u>07 Management and Administration</u> |
| Specialty | <u>073 «Management»</u> |
| Academic programme | <u>«Management»</u> |
| Faculty (Education and Research Institute) | <u>Agricultural Management</u> |
| Developed by: | <u>Dielini M., Doctor of Economics, Professor, Professor of the Department of Production and Investment Management;</u> <u>Holieva M., PhD, Assistant of the Department of Production and Investment Management</u> |

Kyiv – 2026

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF
UKRAINE**

Department of Production and Investment Management

APPROVED

Dean of the Faculty of Agricultural Management
_____ Valerii Bondarenko
"15" June 2026

APPROVED

at the meeting of the Department of Production and
Investment Management
Minutes №14, "27" May 2026
Head of the Department _____ Tetiana VLASENKO

REVIEWED

Program Coordinator _____
_____ Vira BUTENKO

CURRICULUM OF ACADEMIC DISCIPLINE
«PRODUCTION SYSTEMS MANAGEMENT»

Area of knowledge 07 Management and Administration
Specialty 073 «Management»
Academic programme «Management»
Faculty (Education and Agricultural Management
Research Institute)
Developed by: Dielini M., Doctor of Economics, Professor, Professor of the
Department of Production and Investment Management;
Holieva M., PhD, Assistant of the Department of Production
and Investment Management

Description of the discipline «Production systems management»

(up to 1,000 printed characters)

The discipline “Production systems management” provides students with fundamental knowledge and practical skills in organizing, planning, and optimizing production processes at enterprises of various industries. The course examines the essence and structure of production systems, the principles of their design and functioning, as well as modern approaches to managing production efficiency.

Students study methods of production planning and scheduling, inventory and resource management, quality control systems, and lean production tools. The discipline develops students' ability to analyze the current state of production processes, identify bottlenecks, and develop evidence-based recommendations for their improvement. Upon completing the course, students are competent in applying both quantitative and qualitative methods of production management, capable of making informed decisions in conditions of limited resources and uncertainty, and prepared for practical work in operations and production management roles at modern enterprises.

| Area of knowledge, specialty, academic programme, academic degree | | |
|---|-------------------------|------------------|
| Academic degree | <i>bachelor's</i> | |
| Specialty | <i>073 “Management”</i> | |
| Academic programme | <i>Management</i> | |
| Characteristics of the discipline | | |
| Type | selective | |
| Total number of hours | 150 | |
| Number of ECTS credits | 5 | |
| Number of modules | 2 | |
| Course project (work) (if any) | - | |
| Form of assessment | <i>exam</i> | |
| Indicators of the discipline for full-time and part-time forms of university study | | |
| | University study | |
| | Full-time | Part-time |
| Year of study | 3 | |
| Term | 5 | |
| Lectures | <i>30 hours</i> | |
| Practical classes and seminars | <i>30 hours</i> | |
| Laboratory classes | - | |
| Self-study | <i>90 hours</i> | |
| Number of hours per week for full-time students | <i>4 hours</i> | |

1. Aim, competences and expected learning outcomes of the discipline

The purpose of the discipline: to acquire a set of knowledge about production and its organization, to analyze bottlenecks in production systems and develop proposals for their elimination, to plan, design, structure and implement a process-oriented organization of work, to obtain actual time data and calculate the lead time, to professionally rate work and

differentiate remuneration for work based on the result. Use the appropriate tools to build an effective remuneration system.

List of prerequisite courses “Production systems management”: “Economics: Microeconomics and Macroeconomics”; “Organizational Theory”; “Management”.

Competences acquired:

Integral competence (IC): the ability to solve complex specialized problems and practical problems characterized by complex and uncertain conditions in the field of innovation and investment management or in the learning process, which involves the use of theories and methods of social and behavioral sciences;

General competence (GC):

GC 4. Ability to think abstractly, analyze, and synthesize.

GC 11. Ability to adapt and act in a new situation.

GC 12. Ability to generate new ideas (creativity).

GC 15. Ability to act based on ethical considerations (motives).

Special (professional) competence (SC):

SC 1. Ability to identify and describe the characteristics of an organization.

SC 3. Ability to identify the organization’s development prospects.

SC 6. Ability to act in a socially responsible and conscious manner.

SC 7. Ability to select and use modern management tools.

SC 10. Ability to evaluate work performed, ensure its quality, and motivate the organization’s staff.

SC 11. Ability to establish and organize effective communication in the management process.

SC 12. Ability to analyze and structure organizational problems and formulate well-founded decisions.

SC 14. Understand the principles of psychology and use them in professional activities.

SC 15. Ability to form and demonstrate leadership and behavioral skills.

SC 16. The ability to identify and analyze new market opportunities, including in the international business environment, generate new ideas, develop projects, and organize the management of business processes.

Program learning outcomes (PLO):

PLO 4. Demonstrate the ability to identify problems and justify management decisions.

PLO 5. Describe the scope of an organization’s functional areas of activity.

PLO 12. Assess the legal, social, and economic implications of an organization’s operations.

PLO 18. Demonstrate the ability to identify opportunities for the enterprise’s development, develop projects, and organize business process management based on an analysis of market opportunities and the international business environment.

2. Programme and structure of the discipline

| Names of content modules and topics | Number of hours | | | | | | | | |
|--|-----------------|------------|-----------|-----------|-----------|-----------|-----------|----|-----|
| | full-time | | | | | part-time | | | |
| | weeks | total | including | | | total | including | | |
| | | | l | p | ind | | l | p | ind |
| 1 | 2 | 3 | 4 | 5 | 6 | 9 | 10 | 11 | 14 |
| Content module No. 1. The organization's production system, production management, and management of the day-to-day operations of the production system | | | | | | | | | |
| Topic 1: Fundamentals and organization of production management | 1-2 | 17 | 3 | 3 | 11 | | | | |
| Topic 2. Production program and production strategy of the enterprise | 3-4 | 19 | 4 | 4 | 11 | | | | |
| Topic 3. Production system and production processes at the enterprise | 5-6 | 19 | 4 | 4 | 11 | | | | |
| Theme 4. Production capacity and production potential of the enterprise | 7 | 20 | 4 | 4 | 12 | | | | |
| Total for content module 1 | | 75 | 15 | 15 | 45 | | | | |
| Content module No. 2. Management of the Company's Business Operations | | | | | | | | | |
| Topic 5. Management of material and technical resources of the enterprise | 8-9 | 17 | 3 | 3 | 11 | | | | |
| Topic 6. Management of organizational resources and production | 10-11 | 19 | 4 | 4 | 11 | | | | |
| Topic 7. Quality management of enterprise products | 12-13 | 19 | 4 | 4 | 11 | | | | |
| Topic 8. Management of efficiency and efficiency of production activities of the enterprise | 14-15 | 20 | 4 | 4 | 12 | | | | |
| Total for content module 2 | | 75 | 15 | 15 | 45 | | | | |
| Course work | | | - | - | - | | | | |
| Total hours | | 150 | 30 | 30 | 90 | | | | |

3. Topics of lectures

| № | Topic title | Hours |
|-------|--|-------|
| 1 | Fundamentals and organization of production management | 3 |
| 2 | Production program and production strategy of the enterprise | 4 |
| 3 | Production system and production processes at the enterprise | 4 |
| 4 | Production capacity and production potential of the enterprise | 4 |
| 5 | Management of material and technical resources of the enterprise | 3 |
| 6 | Management of organizational resources and production infrastructure of the enterprise | 4 |
| 7 | Management of product quality of the enterprise | 4 |
| 8 | Managing the effectiveness and efficiency of production activities of the enterprise | 4 |
| Total | | 30 |

4. Topic of laboratory (practical, seminars) classes

| № | Topic title | Hours |
|-------|--|-------|
| 1 | Fundamentals and organization of production management | 3 |
| 2 | Production program and production strategy of the enterprise | 4 |
| 3 | Production system and production processes at the enterprise | 4 |
| 4 | Production capacity and production potential of the enterprise | 4 |
| 5 | Management of material and technical resources of the enterprise | 3 |
| 6 | Management of organizational resources and production infrastructure of the enterprise | 4 |
| 7 | Management of product quality of the enterprise | 4 |
| 8 | Managing the effectiveness and efficiency of production activities of the enterprise | 4 |
| Total | | 30 |

5. Topics for self-study

| № | Topic title | Hours |
|-------|---|-------|
| 1 | The organization's production system, production management, and management of the day-to-day operations of the production system | 45 |
| 2 | Environmental management and auditing, environmental protection activities | 45 |
| Total | | 90 |

6. Methods of assessing expected learning outcomes:

- oral or written survey;
- interview;
- test;
- defending practical, design works;
- peer-to-peer assessment, self-assessment.

7. Teaching methods (*select necessary or add*):

- problem-based method;
- practice oriented studying method;
- case method;
- project education method;
- flipped classroom, mixed education method;
- research based method;
- learning discussions and debates method;

- team work, brainstorm method.

8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force

8.1. Distribution of points by types of educational activities

| Educational activity | Results | Assessment | |
|--|--|--|-----------|
| Content module No. 1. The organization's production system, production management, and management of the day-to-day operations of the production system | | | |
| Lecture 1. Fundamentals and organization of production management | PLO 4. Demonstrate the ability to identify problems and justify management decisions. PLO 5. Describe the scope of an organization's functional areas of activity. PLO 12. Assess the legal, social, and economic implications of an organization's operations. PLO 18. Demonstrate the ability to identify opportunities for the enterprise's development, develop projects, and organize business process management based on an analysis of market opportunities and the international business environment. | - | |
| Practical work 1. Fundamentals and organization of production management | | 11 | |
| Lecture 2. Production program and production strategy of the enterprise | | - | |
| Practical work 2. Production program and production strategy of the enterprise | | 11 | |
| Lecture 3. Production system and production processes at the enterprise | | - | |
| Practical work 3. Production system and production processes at the enterprise | | 11 | |
| Lecture 4. Production capacity and production potential of the enterprise | | - | |
| Practical work 4. Production capacity and production potential of the enterprise | | 11 | |
| Self-study 1 | | 26 | |
| Module control work 1. | | 30 | |
| Total for module 1 | | 100 | |
| Content module No. 2. Management of the Company's Business Operations | | | |
| Lecture 5. Management of material and technical resources of the enterprise | | PLO 4. Demonstrate the ability to identify problems and justify management decisions. PLO 5. Describe the scope of an organization's functional areas of activity. PLO 12. Assess the legal, social, and economic implications of an organization's operations. PLO 18. Demonstrate the ability to identify opportunities for the enterprise's development, develop projects, and organize business process management based on an analysis of market opportunities and the international business environment. | - |
| Practical work 5. Management of material and technical resources of the enterprise | | | 11 |
| Lecture 6. Management of organizational resources and production infrastructure of the enterprise | | | - |
| Practical work 6. Management of organizational resources and | | | 11 |

| | | |
|--|--|------------|
| production infrastructure of the enterprise | | |
| Lecture 7. Management of product quality of the enterprise | | - |
| Practical work 7. Management of product quality of the enterprise | | 11 |
| Lecture 8. Managing the effectiveness and efficiency of production activities of the enterprise | | - |
| Practical work 8. Managing the effectiveness and efficiency of production activities of the enterprise | | 11 |
| Self-study 2. | | 26 |
| Module control work 2. | | 30 |
| Total for module 2 | | 100 |
| Class work | $(M1 + M2)/2 * 0,7 \leq 70$ | |
| Exam | 30 | |
| Total for year | $(\text{Class work} + \text{exam}) \leq 100$ | |
| Course project/work | - | - |

8.2. Scale for assessing student's knowledge

| Student's rating, points | National grading (exam/credits) |
|--------------------------|---------------------------------|
| 90-100 | excellent |
| 74-89 | good |
| 60-73 | satisfactory |
| 0-59 | unsatisfactory |

8.3. Assessment policy

| | |
|--|--|
| Deadlines and exam retaking rules | works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave). |
| Academic integrity rules | cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used |
| Attendance rules | Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's consent) |

9. Teaching and learning aids:

1. E-learning course "Production systems management":

<https://elearn.nubip.edu.ua/course/view.php?id=3751>

10. Recommended sources of information

1. Chase R. B., Aquilano N. J., Jacobs F. R. Operations and Supply Chain Management. 15th ed. New York : McGraw-Hill Education, 2022. 864 p.
2. Chopra S., Meindl P. Supply Chain Management: Strategy, Planning, and Operation. 7th ed. Hoboken : Pearson, 2021. 528 p.

3. Groover M. P. Automation, Production Systems, and Computer-Integrated Manufacturing. 5th ed. Hoboken : Pearson, 2019. 832 p.
4. Heizer J., Render B., Munson C. Operations Management: Sustainability and Supply Chain Management. 13th ed. Hoboken : Pearson, 2020. 912 p.
5. Imai M. Gemba Kaizen: A Commonsense Approach to a Continuous Improvement Strategy. 2nd ed. New York : McGraw-Hill, 2019. 480 p.
6. Jacobs F. R., Berry W. L., Whybark D. C. Manufacturing Planning and Control for Supply Chain Management. 7th ed. New York : McGraw-Hill Education, 2022. 544 p.
7. Liker J. K. The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer. 2nd ed. New York : McGraw-Hill, 2021. 368 p.
8. Nahmias S., Olsen T. L. Production and Operations Analysis. 7th ed. Long Grove : Waveland Press, 2021. 784 p.
9. Reid R. D., Sanders N. R. Operations Management: An Integrated Approach. 7th ed. Hoboken : Wiley, 2022. 576 p.
10. Schroeder R. G., Goldstein S. M. Operations Management in the Supply Chain. 8th ed. New York : McGraw-Hill Education, 2021. 608 p.
11. Slack N., Brandon-Jones A., Johnston R. Operations Management. 9th ed. Hoboken : Pearson, 2022. 736 p.
12. Stevenson W. J. Operations Management. 14th ed. New York : McGraw-Hill Education, 2021. 896 p.
13. Voss C., Tsikriktsis N., Frohlich M. Case Research in Operations Management // International Journal of Operations and Production Management. 2020. Vol. 42. № 1. P. 1–26.
14. Womack J. P., Jones D. T. Lean Thinking: Banish Waste and Create Wealth in Your Corporation. Updated ed. New York : Simon & Schuster, 2023. 400 p.
15. Zhong R. Y., Xu X., Klotz E. Intelligent Manufacturing in the Context of Industry 4.0 // Engineering. 2020. Vol. 3. № 5. P. 616–630.