NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of Dairy and Beef Production Technology
Department of Occupational Safety and Biotechnical Systems in Animal Husbandry

"**APPROVED**"
Faculty of Agrarian Management
"____"_____ 2025

CURRICULUM OF ACADEMIC DISCIPLINE
TECHNOLOGIES IN ANIMAL FARMING

Area of knowledge D "Business, Administration and Law"

Specialty D5 "Marketing"

Academic programme Marketing

Faculty of Agrarian Management

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Description of the discipline

TECHNOLOGIES IN ANIMAL PRODUCTION

It discipline focused on the application of modern technologies to enhance the efficiency, sustainability, and welfare of livestock systems. It encompasses innovations in breeding, nutrition, housing, disease control, and reproductive management, aiming to improve productivity while minimizing environmental impact. This field integrates biotechnology, automation, data analysis, and precision farming tools to optimize animal health and farm operations. Emphasis is also placed on animal welfare standards and sustainable resource use, making it essential for meeting global demands for animal products responsibly.

Academic degree, specialty, academic programme		
Academic degree	*Bachelor's*	
Specialty	*D5 "Marketing"*	
Academic programme	*Marketing*	
Characteristics of the discipline		
Type	compulsory	
Total number of hours	120	
Number of ECTS credits	4	
Number of modules	4	
Course project (work) (if any)	–	
Form of assessment	*exam*	
Indicators of the discipline for full-time and part-time forms of university study		
	Full-time	Part-time
Year of study	1	–
Semester	1	–
Lectures	*30 hours*	–
Practical classes and seminars	–	–
Laboratory classes	*30 hours*	–
Self-study	*60 hr.*	–
Number of hours per week for full-time students	*4 hr*	–

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

The **main aim** of this discipline is to equip students with the knowledge and skills needed for the rational selection and effective use of various technological elements. These elements are intended to increase animal productivity, lower production costs, and improve the competitiveness of agricultural products. The **main objectives** include developing practical skills for producing sustainable animal products. This necessitates the widespread adoption of variety-based, intensive, energy- and resource-efficient, and environmentally sustainable technologies. Additionally, it involves aligning the production of different farm animal species with market demands.

Competences acquired:

Integral competency (IC): The ability to solve complex specialised tasks and practical problems in the field of marketing or in the learning process, which involves the application of relevant theories and methods and is characterised by complexity and uncertainty of conditions.

General competencies (GC):

GC2. The ability to preserve and enhance moral, cultural, scientific values and achievements of society based on an understanding of 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, to use various types and forms of physical activity for active recreation and healthy lifestyle.

GC4. The ability to learn and acquire modern knowledge.

GC6. Knowledge and understanding of the subject area and understanding of professional activities.

GC7. Ability to apply knowledge in practical cases.

GC14. Ability to act in a socially responsible and conscious manner.

Special (professional) competencis (SC):

SC 4. Ability to carry out marketing activities based on an understanding of the essence and content of marketing theory and the functional relationships between its components.

SC 5. Ability to correctly apply marketing methods, techniques and tools.

SC 14. Ability to propose improvements to marketing functions.

Expected Learning Outcomes (ELO):

ELO 12. Demonstrate the skills of independent work, flexible thinking, openness to new knowledge, and being critical and self-critical.

ELO 16. To meet the requirements for a modern marketer, to improve the level of professional personal training.

ELO 19. Demonstrate skills in developing an enterprise's marketing policy, applying modern methods, concepts and tools of marketing commodity policy, pricing, sales, communications, consumer behaviour research, target audience formation to determine the prospects for the development of market participants.

2. Program and structure of the discipline

Names of content modules and topics	Number of hours								
	Full-time form					Full-time form			
	weeks	total	including			total	including		
			l	p	self		l	p	self
1	2	3	4	5	6	7	8	9	10
Module 1. Basics of breeding feeding and keeping of farmed animals									
Topic 1. Basics of farm animals breeding	1-2	9	3	3	3				
Topic 2. General of animal nutrition and assessment of nutritional value of feedstuffs	2-3	9	3	3	3				
Topic 3. Feedstuffs, their classification, and usage in feeding farm animals	4	7	2	2	3				
Sum of module 1		**25**	**8**	**8**	**9**				
Module 2. Livestock Production Technologies									
Topic 4. Production technology for dairy and beef cattle	5	7	2	2	3				
Topic 5. Digital farming and farms profitability.	6	7	2	2	3				
Topic 6. Swine production	7	7	2	2	3				
Topic 7. Poultry production	8	7	2	2	3				
Topic 8. Beekeeping production	9	7	2	2	3				
Sum of module 2		**35**	**10**	**10**	**15**				
Module 3: Mechanization of Livestock Production									
Topic 9. Fundamentals of livestock mechanization. Equipment for keeping and caring of animals	10	8	2	2	4				
Topic 10. Mechanization of loading, preparation and distribution of feed	11	8	2	2	4				
Topic 11. Mechanization of water supply and animal watering, manure cleaning and utilization.	12	8	2	2	4				
Topic 12. Mechanization of obtaining of animal products	13	8	2	2	4				
Sum of module 3		**32**	**8**	**8**	**16**				
Module 4. Occupational safety in Livestock Farming									
Topic 13. Basics of occupational safety and health.	14	8	2	2	4				
Topic 14. Basic safety and hygiene requirements in animal husbandry	15	8	2	2	4				
Sum of module 4		**16**	**4**	**4**	**8**				
Total for course		**120**	**30**	**30**	**60**				

3. Topics of lectures

№	Topic title	Number of hours
Content module 1		
1	Basics of farm animals breeding.	3
2	General of animal nutrition and assessment of nutritional value of feedstuffs.	3
3	Feedstuffs, their classification, and usage in feeding farm animals.	2
4	Production technology for dairy and beef cattle.	2
5	Digital farming and farms profitability.	2
6	Swine production.	2
7	Poultry production.	2
8	Beekeeping production.	2
9	Fundamentals of livestock mechanization. Equipment for keeping and caring of animals	2
10	Mechanization of loading, preparation and distribution of feed	2
11	Mechanization of water supply and animal watering, manure cleaning and utilization.	2
12	Mechanization of obtaining animal products	2
13	Basics of occupational safety and health.	2
14	Basic safety and hygiene requirements in animal husbandry	2
	Sum	**30**

4. Topics of practical classes

№	Topic title	Number of hours
Content module 1		
1	Livestock identification methods. Legislative bases. Identification and traceability issues	3
2	Evaluation of farm animals for exterior and growth	3
3	Evaluation of nutritional value of feedstuffs by the amount of digestible nutrients	2
4	Determining net energy feedstuffs	2
5	Calculation of the technological process of milk production	2
6	Estimating farm economical values for milk production and marketing	2
7	Calculation of the technological process of swine production	2
8	Standards for basic types of agricultural products	2
9	Equipment for animals keeping and microclimate creation	2
10	Machines for feed preparation and distribution	2
11	Equipment for watering systems and manure cleaning	2
12	Milking and shearing machines	2
13	Documentation on occupational safety	2
14	Determination of dangerous production factors	2
	Sum	**30**

5.Topics for self-study

№	Topic title	Number of hours
1	Organization of breeding work in livestock	2
2	Technology of growing replacing heifers in the post-milk period.	2
3	The structure and function of the breast. The composition of milk of the main species of farm animals	4
4	Technology of production, processing and sale of milk. Primary and secondary processing of milk.	4
5	Ways to increase the milk productivity of farm animals and economic efficiency of milk production.	2
6	Cattle breeds of meat productivity - Ukrainian meat, Volyn meat and their types, Hereford, Aberdeen-Angus.	2
7	Technology of fattening pigs for meat, bacon and fatty conditions	4
8	Technology of pork production in specialized farms	4
9	Digitalization of farm animal breeding	4
10	Sheep products (wool, smushki, sheepskin, meat, milk)	4
11	Economic importance and economic and biological characteristics of goats	2
12	Companion animals	2
13	Farm general planning	4
14	Equipment for animal caring	4
15	Equipment for waste utilization	4
16	Robotics systems in livestock	4
17	Basics of electrical safety at livestock enterprises	4
18	Basics of fire safety on livestock farms	4
	Sum	**60**

5. Methods for assessing expected learning outcomes:

- - exam;
- - module tests;
- - essays;
- - calculation and calculation-graphic works;
- - defend of laboratory tasks;

6. Teaching methods.

Methods of organization and implementation of teaching and learning of students who used to study subjects:

in terms of transmission and perception of educational information :

a. verbal (lecture);

b. visual (illustration , demonstration);

c. practical (laboratory work);

in terms of logic and thinking:

d. explanatory, illustrative (presentation);

e. reproductive (short test papers);

in terms of management training:

f. job training under the supervision of a teacher;

g. independent work;

in terms of a team:

h. incentives (extra points for abstracts);

aspect of self-employment:

i. Training Module : structural logic scheme;

j. sample tests

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. Results assessment.

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

8.1. Distribution of points by types of educational activities

Educational activity	**Results**	**Assess-ment**
Module 1. **Basics of breeding feeding and keeping of farmed animals**		
Topic 1. Basics of farm animals breeding.		
Practical work 1.	**ELO 4, The student must:** ***Know*** the basics of animal genetics, breeding and biotechnology. ***Understand*** the essence of animal breeding methods, exterior and productive qualities of animals of different productivity areas	**20**
Topic 2. **General of animal nutrition and assessment of nutritional value of feedstuffs**		
Practical work 2.	**ELO 6, The student must:** ***Know*** the basics of animal nutrition and feed nutritional assessment. ***Understand*** methodological approaches to determining the energy content of feed.	**20**
Topic 3. **Feedstuffs, their classification, and usage in feeding farm animals**		
Practical work 3.	**ELO 6, The student must:** ***Know*** the concept of feed, its classification. And technologies for the preparation, storage and use of feed. ***Understand*** the essence of preservation in the preparation of silage and haylage.	**20**
Self-study 1	**ELO 6. The student should** independently learn to use sources to search for information, including various different databases	**20**
Test M1		**20**
Total M1		**100**
Module 2. **Basics of breeding feeding and keeping of farmed animals**		
Topic 4. **Production technology for dairy and beef cattle.**		
Practical work 4	**ELO 5, The student must:** ***Know*** the essence of milk and beef production technology.	**12**

Topic 5. **Digital farming and farms profitability.**		
Practical work 5	**ELO 5, The student must:** ***Know*** the methodological approach to calculating the economic efficiency of milk production. ***Analyze*** the results and use them skilfully in practice.	**12**
Topic 6. **Swine production.**		
Practical work 6	**ELO 5, ELO 6, The student must:** ***Know*** the technology of pork production in large pig farms and small private enterprises.	**12**
Topic 7. **Poultry production.**		
Practical work 7	**ELO 5, ELO 6, The student must:** ***Know*** the technology of poultry production in poultry farms and small private enterprises. ***Understand*** the peculiarities of poultry rearing and production of eggs or poultry meat	**12**
Topic 8. Beekeeping production.		
Practical work 8	**ELO 12, The student must:** ***Know*** the technology of beekeeping products production. ***Understand*** the peculiarities of the production of various bee products and preventive measures in beekeeping.	**12**
Self-study 2	**ELO 6. The student should** independently learn to use sources to search for information, including various different databases	**20**
Test M2		**20**
Total M2		**100**
Module 3. **Mechanization of Livestock Production**		
Topic 9. **Fundamentals of livestock mechanization. Equipment for keeping and caring of animals.**		
Practical work 9	**ELO 5, The student must:** ***Know*** the essence of livestock mechanization, technologies and examples of equipment for keeping and caring of animals	**15**
Topic 10. **Mechanization of loading, preparation and distribution of feed.**		
Practical work 10	**ELO 5, The student must:** ***Know*** technologies and examples of equipment for loading, preparation and distribution of feed.	**15**
Topic 11. **Mechanization of water supply and animal watering, manure cleaning and utilization.**		
Practical work 11	**ELO 5, ELO 6, The student must:** ***Know*** technologies and examples of equipment for water supply and animal watering, manure cleaning and utilization.	**15**
Topic 12. **Mechanization of obtaining of animal products.**		
Practical work 12	**ELO 5, ELO 6, The student must:** ***Know*** technologies and examples of equipment for milking, shearing, obtaining other animal products.	**15**
Self-study 3	**ELO 6. The student should** independently learn to use sources to search for information, including various different databases	**20**
Test M3		**20**
Total M3		**100**
Module 4. **Occupational safety in Livestock Farming**		
Topic 13. **Basics of occupational safety and health.**		
Practical work 13	**ELO 5, The student must:** ***Know*** the essence of occupational safety and health in livestock farming.	**20**
Topic 14. **Basic safety and hygiene requirements in animal husbandry.**		
Practical work 14	**ELO 5, The student must:** ***Know*** the technologies and means of safe work in animal husbandry.	**20**
Self-study 4	**ELO 6. The student should** independently learn to use sources to search for information, including various different databases	**40**
Test M4		**20**
Total M4		**100**
Class work		**(70**
Exam		**30**
Total for course		**100**

8.1. 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

8.2. 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. Program Of The Course TECHNOLOGIES IN ANIMAL FARMING https://elearn.nubip.edu.ua/course/view.php?id=369
2. Technology of Animal Products Production. The Practical guide for laboratory classes for the students of economical majors (for group with intensive English learning). – 2017.

10. **Recommended sources of information**

1. Костенко В. І. Технологія виробництва молока і яловичини : підручник. К.: «Ліра», 2023. 443 с.
2. Технологія виробництва і переробки продукції свинарства : навчальний посібник / М. Повод, О. Бондарська, В. Лихач, С. Жижка, В. Нечмілов та ін. – Київ : Науково-методичний центр ВФПО, 2021. – 360 с.
3. Угнівенко А.М., Колісник О.І., Кос Н.В. М'ясне скотарство. підручник. К.: «ЦП Компринт», 2020. 536 с.
4. Угнівенко, А.М., Колісник, О.І., Антонюк, Т.А., Носевич, Д.К., Кос, Н.В. Виробництво екологічно безпечної продукції скотарства: підручник. К.: «ЦП Компринт», 2022. 480 с.
5. Шуле Г., Пфафф С., Ващенко П., Лавріненко І., Мазур Н., Гетя А., Кононенко Р., Матвєєв М., Якубець Т., Пархоменко Л., Стрижак Т., Дудник Т., Дудус Т., Гетя О., Степура Л. Стале тваринництво та благополуччя тварин. Модуль 3 цифрове тваринництво. Електронний посібник. К.: «НМЦ ВФПО Агроосвіта», 2024. https://vukladach.pp.ua/MyWeb/manual/nmcvfpo/TSUFROVE_TVARUNNUSTVO_MODYL_3/Golovna/Golovna.htm
6. Blair, R. (2021). Nutrition and feeding of organic cattle. Cabi. Nutrition and feeding of organic cattle (2-ге вид.). https://doi.org/10.1079/9781789245554.0000
7. Campbell, E. (2021). Livestock Farming. Murphy & Moore Publishing. 100 p.
8. Lovarelli, D., Bacenetti, J., & Guarino, M. (2020). A review on dairy cattle farming: Is precision livestock farming the compromise for an environmental, economic and social sustainable production?. Journal of Cleaner Production, 262, 121409.
9. Mahmud, M. S., Zahid, A., Das, A. K., Muzammil, M., & Khan, M. U. (2021). A systematic literature review on deep learning applications for precision cattle farming. Computers and Electronics in Agriculture, 187, 106313. https://doi.org/10.1016/j.compag.2021.106313
10. Namara, J. P., & McSweeney, P. L. H. (2021). Encyclopedia of Dairy Sciences. Elsevier Science & Technology Books. 4874 p.
11. National Academies of Sciences, Engineering, and Medicine; Division on Earth and Life Studies; Board on Agriculture and Natural Resources; Committee on Nutrient Requirements of Dairy Cattle. (2021). Nutrient Requirements of Dairy Cattle: Eighth Revised Edition. National Academies Press (US).
12. Shaffer, V. (2021). Introduction to Animal Science. Syrawood Publishing House., 240 p.
13. Webster, J. (2020). Understanding the dairy cow. John Wiley & Sons. 274 p.
14. Webster, J., & Margerison, J. (Eds.). (2022). Management and welfare of farm animals: the UFAW farm handbook. John Wiley & Sons.