



COURSE SYLLABUS «Agriculture»

Degree of higher education – Bachelor
Specialization – 201 «Agronomy»
Educational program – «Agronomy»
Academic year – 2, **semester** – 3, 4
Form of study – full-time, part-time
Number of ECTS credits – 6.5
Language of instruction – English

Lecturer of the course
Contact information of the lecturer (e-mail)
Course page on eLearn

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COURSE DESCRIPTION

The main purpose of agriculture is the efficient use of land, preservation, and improvement of soil fertility, obtaining a stable, energetically, and economically feasible yield of agricultural crops from a unit of area. **The main purpose** of this course is to help the future generation to improve soil fertility, agricultural productivity and yield and minimize crop losses. By considering agriculture as an applied science, students gain an understanding of factors affecting plant growth, soil fertility indicators, laws of agriculture, scientifically based crop rotations, measures, methods, and systems of soil cultivation, agrotechnical requirements of agricultural crops before sowing, crop care measures, and anti-erosion measures.

Competencies of the educational program:

Integrative competency (IC):

- *The ability to solve complex specialized tasks and practical problems in agronomy, which involves the application of theories and methods of the relevant science and is characterized by complexity and compliance with zonal conditions.*

General competencies (GC):

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

Professional (special) competencies (PC):

- Basic knowledge of the main modules of agrarian science in agriculture.
- The Ability to manage complex actions or projects, responsibility for decision-making in specific production conditions.
- The ability to manage the factors affecting plant growth with different resource filling and changes in the ecological environment, which allows obtaining the highest quantity and quality of grown products from a unit of area with the lowest resource costs.

Program learning outcomes (PLO) of the educational program:

- *To demonstrate knowledge and understanding of fundamental disciplines to the extent necessary to possess relevant skills in the field of agronomy.*
- *To analyze and integrate knowledge from general and special professional training to the extent necessary for specialized professional work in the field of agronomy.*
- *To design and organize activities for the cultivation of high-quality agricultural products in accordance with current requirements.*
- *To Integrate and improve production processes of growing agricultural products in accordance with current requirements.*
- *To plan economically profitable production of agricultural products.*

COURSE STRUCTURE

Topic	Hours (lecture/laboratory)	Learning outcomes	Tasks	Assessment
Semester 1				
Content Module one. Scientific bases of agriculture				
Topic 1. Agriculture – food, energy, and environmental safety of Ukraine	2	Understand the current state of the industry and make decisions about the development of agriculture as an industry, science and academic discipline.	Completing independent work (including in eLearn)	0–100
Topic 2. Scientific bases of agriculture.	6	Have fundamental knowledge about the development of agriculture as a science	Completing independent work (including in eLearn)	0–100
Topic 3. Factors affecting plant growth and laws of agriculture	6/14	Know the laws of agriculture and be able to implement them in production.	Submitting laboratory work 1. Determination of soil water permeability. 2. Determination of soil moisture, total moisture supply and its productive part. 3. Determination the structure of the treated soil layer by the method of saturation in cylinders. Determination of bulk density of soil. 4. Determination of soil penetration resistance. Completing independent work (including in eLearn).	0–100
Topic 4. Living conditions of agricultural plants and methods of their regulation	6/14	Assess the current state of the soil as a means of production, develop measures and manage the main indicators of soil fertility.	Submitting laboratory work 1. Determination of soil aggregation according to Savvinov (dry sieving) and water-stable aggregates (wet sieving). 2. Determination of soil viscosity by the method of MO Kaczynski 3. Determination of soil plasticity, particle size distribution and soil consistency by the Atterberg method. Completing independent work (including in eLearn). Taking tests.	0–100
Content Module two. Scientific bases of crop rotations				

Topic 1. Scientific bases of crop rotations	4	To have the scientific basis for the necessity of alternation of crops in crop rotation.	Completing independent work (including in eLearn).	0–100
Topic 2. Placement of major field crops and fallow field in crop rotation	6/17	To have the principles of building crop rotation systems in farms of different soil and climate zones and forms of ownership. The ability to develop a scientifically based structure of sown areas.	Submitting laboratory work 1. Characteristics of the Polissya zone. Polissya crop rotations. 2. Characteristics of the Forest-Steppe zone. Forest-steppe crop rotations. 3. Characteristics of the Steppe zone. Steppe crop rotations. Preparing presentations and reports by students. Completing independent work (including in eLearn). Taking tests.	0–100
Total for semester1				70
Exam				30
Total for course				100
Semester 2				
Content Module three. Design, introduction, and development of crop rotations				
Topic 1. Classification of crop rotations	2	The ability to classify crop rotations according to the type of products produced in it and the ratio of the main groups of crops in the crop rotation.	Completing independent work (including in eLearn).	0–100
Topic 2. Design, introduction, and development of crop rotations	2/3	Ability to design, introduction, and development of crop rotation.	Submitting laboratory work: Drawing up a plan for the development of crop rotations Completing independent work (including in eLearn). Taking tests.	0–100
Content Module four. Soil tillage. Basics of farming systems				
Topic 1. Theoretical foundations of tillage	2	Understand the scientific basis of tillage.	Completing independent work (including in eLearn).	0–100
Topic 2. Technological operations (processes) in tillage	2	Understand the main technological processes of soil tillage and their importance.	Completing independent work (including in eLearn).	0–100
Topic 3. Measures (techniques) of tillage	2	Have knowledge of soil tillage measures and their classification.	Completing independent work (including in eLearn).	0–100

Topic 4. Tillage systems	2	Have fundamental knowledge of modern energy-saving tillage systems.	Completing independent work (including in eLearn).	0–100
Topic 5. The system of primary tillage	4/4	Develop a system of basic soil tillage in crop rotation adapted to the specific soil, climatic and economic conditions of the farm.	Submitting laboratory work: Development of a system of primary tillage in crop rotation Completing independent work (including in eLearn).	0–100
Topic 6. The system of pre-sowing tillage for spring crops	4/4	Develop a system of pre-sowing soil tillage in crop rotation adapted to the specific soil, climatic and economic conditions of the farm.	Submitting laboratory work: Development of a system of pre-sowing tillage in crop rotation. Completing independent work (including in eLearn).	0–100
Topic 7. The system of post-sowing tillage	4/4	Develop a system of post-sowing soil tillage in crop rotation adapted to the specific soil, climatic and economic conditions of the farm.	Submitting laboratory work: Development of a system of post-sowing tillage in crop rotation Completing independent work (including in eLearn).	0–100
Topic 8. Minimization of tillage	2	Understand the main directions of minimization of soil cultivation and be able to apply them in practice.	Completing independent work (including in eLearn).	0–100
Topic 9. Conservation tillage	2	To develop systems of soil protective tillage in conditions of water and wind erosion.	Completing independent work (including in eLearn).	0–100
Topic 10. Concepts of agricultural systems, their development and current state	2	To know the basics of farming systems and its links.	Completing independent work (including in eLearn). Taking tests.	0–100
Total for semester2				70
Exam				30
Total for course				100

ASSESSMENT POLICY

<i>Policy regarding deadlines and resits:</i>	Assignments submitted after the deadline without valid reasons will be graded lower. Resitting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons).
<i>Academic honesty policy:</i>	Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used.
<i>Attendance policy:</i>	Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty).

SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

RECOMMENDED SOURCES OF INFORMATION

Basic:

1. Землеробство. Навчальний посібник / Танчик С. П. та ін. Київ. : ЦП «Компринт», 2022. 350 с.
2. Центило Л. В., Танчик С. П., Цюк О. А. Управління родючістю ґрунту за зберігаючого землеробства. Вінниця «Твори», 2021. 361 с.
3. Танчик С. П., Рожко В. М., Карпенко О. Ю. Землеробство з основами ґрунтознавства. Навчальний посібник. Київ. 2021. 442 с.
4. Танчик С. П., Примак І. Д., Літвінов Д. В., Центило Л. В. Сівозміни: підручник. 2019. 364 с.
5. Танчик С. П., Цюк О. А., Центило Л. В. Наукові основи систем землеробства. Монографія. Вінниця: ТОВ «Нілан ЛТД», 2015. 314 с.
6. Гудзь В. П., Примак І. Д., Танчик С. П. Землеробство. К.: Центр учбової літератури, 2014. 432 с.
7. Примак І. Д., Манько Ю. П. та ін. Екологічні проблеми землеробства. К.: Центр учбової літератури, 2010, 455 с.
8. Косолап М. П., Кротінов О. П. Система землеробства no-till. К.: Логос, 2011. 352 с.

Auxiliary:

1. Камінський В. Ф., Літвінов Д. В., Шиліна Л. І. Агробіологічні основи короткоротаційних сівозмін Лісостепу. Монографія, 2019. 228 с.
2. Шувар І. А., Роїк М. В., Іванишин В. В., Сендецький В. М., Центило Л. В. Сидерація в технологіях сучасного землеробства: монографія. Івано-Франківськ : Симфонія форте, 2016. 180 с.
3. Примак І. Д., Косолап М. П., Войтович М. В. та ін. Механічний обробіток ґрунту: історія, теорія, практика. Навчальний посібник. Вінниця. ТОВ «Твори», 2019. 425 с.
4. Циліорик О. І. Система мульчувального обробітку ґрунту в сівозмінах Північного Степу. Монографія. Дніпро: Новий Світ, 2019. 297 с.
5. Шевченко М. В. Наукові основи систем обробітку ґрунту в умовах нестійкого та недостатнього зволоження. Монографія. Харків, 2019. 209 с.

6. Танчик С. П. No-till і не тільки. Сучасні системи землеробства. Навчальний посібник. К. : Юніверс Медіа, 2009. 159 с.

7. Землеробство. Терміни та визначення понять : ДСТУ 4691:2006. – [Чинний від 2006-12-11]. К. : Держспоживстандарт України, 2008. 37 с. – (Національний стандарт України).

Information resources

1. Державна служба статистики України [Електронний ресурс] – Режим доступу до ресурсу: <http://www.ukrstat.gov.ua/>.

2. worldometers [Електронний ресурс] – Режим доступу до ресурсу: <https://www.worldometers.info/uk/>.

3. Інтернет-бібліотека Організації економічного співробітництва та розвитку (ОЕСР) [Електронний ресурс] – Режим доступу до ресурсу: https://www.oecd-ilibrary.org/agriculture-and-food/data/oecd-agriculture-statistics_agr-data-en.

4. Продовольча та сільськогосподарська організація Об'єднаних націй (ФАО) [Електронний ресурс] – Режим доступу до ресурсу: <http://www.fao.org/countryprofiles/index/ru/?iso3=UKR>.