СИЛАБУС ДИСЦИПЛІНИ
«COMPUTER-AIDED LAND CADASTRAL SYSTEMS»

Degree of higher education - Bachelor
Specialization 193. Geodesy and Land Management
Educational program «Geodesy and Land management»
Academic year 4, semester 8
Number of ECTS credits: 3
Language of instruction: English

Lecturer of the course	**Koshel Anton, Dr.Sc., Associate Professor**
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Course page on eLearn	**https://elearn.nubip.edu.ua/course/view.php?id=1715**

ОПИС ДИСЦИПЛІНИ

The purpose of the course is to master and acquire the necessary theoretical knowledge and practical skills in the field of geoinformation support of the state land cadastre and knowledge formation on the development of geoinformation land cadastral national systems of Ukraine and the world, the contribution of Ukrainian and foreign scientists.

The task of studying the discipline is to form a specialist's theoretical knowledge and practical skills of geoinformation support of land cadastral works for planning the development of territories, inventory of land resources, forecasting the state of the land fund, control over the use and protection of soils.

The discipline provides the formation of a number of competencies:

General competencies (GC):

GC01. Ability to learn and master modern knowledge;
GC02. Ability to apply knowledge in practical situations;
GC05. Ability to communicate in a foreign language;
GC07. Ability to work autonomously;
GC08. Ability to work in a team;
GC12. The ability to exercise one's rights and responsibilities as a member of society; awareness of the value of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine;
GC13. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of history, the patterns of development of the subject area, its place in the general system of knowledge about nature and society, as well as in the development of society, technology and technologies, to use various types and forms of motor activities for recreation and leading a healthy lifestyle.

Special competencies (SC):

- SC02. Ability to apply theories, principles, methods of physical and mathematical, natural, socio-economic, engineering sciences when performing tasks of geodesy and land management;
- SC03. Ability to apply regulatory and legal acts, regulatory and technical documents, reference materials in professional activity;

- SC04. Ability to choose and use effective methods, technologies and equipment for carrying out professional activities in the field of geodesy and land management; SK05. The ability to use modern information, technical and technological support to solve complex issues of geodesy and land management;
- SC06. The ability to perform remote, ground, field and camera research, engineering calculations for the processing of research results, form research results, prepare reports when solving geodesy and land management tasks;
- SC07. The ability to collect, update, process, critically evaluate, interpret, store, publish and use geospatial data and metadata regarding objects of natural and man-made origin;
- SC08. The ability to carry out professional activities in the field of geodesy and land management, taking into account the requirements of professional and civil safety, labor protection, social, ecological, ethical, economic aspects.

Program learning outcomes:

PH2. Organize and manage the professional development of individuals and groups;

PH3. Convey information, ideas, problems, solutions, own experience and arguments to specialists and non-specialists;

PH4. Know and apply in professional activity regulatory and legal acts, regulatory and technical documents, reference materials in the field of geodesy and land management and related fields;

PH5. Apply conceptual knowledge of natural and socio-economic sciences when performing tasks of geodesy and land management;

PH9. Collect, evaluate, interpret and use geospatial data, metadata about objects of natural and man-made origin, apply statistical methods of their analysis to solve specialized problems in the field of geodesy and land management.

COURSE STRUCTURE

Topic	Hours (ecture/laboratory ractical, seminar)	Learning outcomes	Tasks	Assessment
Semester 8				
MODULE 1. BASIC CONCEPTS OF GEOINFORMATION SUPPORT OF LAND CADASTRE				
Topic 1. Objectives and content of the course. The concept of geoinformation support of land cadastre.	2/3/10	Understand the theoretical foundations of the modern process of land cadastre geoinformation support and its role in the system of land relations. Know the tasks, basic concepts and definitions, requirements for geoinformation land cadastral systems. Know the content, structure of the course geoinformation land cadastral systems.	Execution of the laboratory and its delivery (including in elearn).	4
Topic 2. Regulatory documents and standardization in	1/3/9	Understand the structure and standards governing the operation of	Execution of the laboratory and its	4/2

the study of the discipline "Geoinformation land cadastral systems".		geoinformation land cadastral systems. Know the basic legal documents governing the creation and operation of geoinformation land cadastral systems. Know the international ISO standards for the creation of geoinformation support land cadastral systems.	delivery (including in elearn).	
Topic 3. Equipment and software for the implementation of geographic land cadastral system.	2/3/10	Know the hardware, basic equipment and existing software on the market for the creation and development of geoinformation land cadastral systems. Know the classification of land use restrictions.	Execution of the laboratory and its delivery (including in elearn). Performing independent work (including in elearn).	4/2
Topic 4. Geoinformation modeling. Land cadastral databases. Data banks.	2/4/10	Know the types of land cadastral databases and geodata banks. Distinguish geoinformation modeling in geoinformation land cadastral systems.	Execution of the laboratory and its delivery (including in elearn).	2/4
Topic 5. Functions of land information systems.	2/3/9	Know geoinformation land cadastral systems as components of land information systems (LIS). Understand the main functions and tasks that solve land information systems.	Execution of the laboratory and its delivery (including in elearn).	6
MODULE 2. THE CONCEPT OF CREATING GEOGRAPHIC INFORMATION LAND CADASTRAL SYSTEMS.				
Topic 6. Information base of geoinformation systems. The concept of creating geographic information land cadastral systems.	2/5/12	Know the basis of the source of geospatial information for the creation of the National Cadastral System (NCS). Understand the main components of the NCS information base. Know the conceptual foundations, principles,	Execution of the laboratory and its delivery (including in elearn).	4/2

		architecture of the NCS.		
Topic 7. Fundamentals of analysis and cartographic modeling. Cartographic support of SLC.	2/5/7	Know the main tasks of GIS analysis in geoinformation land cadastral systems. Know cartographic modeling using CALCS. Understand the types of cartographic support of the State Land Cadastre, its types.	Execution of the laboratory and its delivery (including in elearn). Performing independent work (including in elearn).	4/2
Topic 8. Basics of creating land cadastral information. Cartographic methods of working with land cadastre. Index cadastral map (plan).	2/4/8	Know the principles of creating land cadastral information. Understand the electronic terrain map information classifier. Know the basics of creating and working with digital index cadastral maps (plans).	Execution of the laboratory and its delivery (including in elearn).	4/2
Всього	15/30/75	-	-	70
Екзамен	30	-	-	30
Всього за курс				100

ASSESSMENT POLICY

Policy regarding deadlines and resits:	Deadlines are defined in e-learn course. Works being submitted after deadlines without a reason are evaluated at a lower grade. Rearrangement of module tests takes place with the permission of the lecturer in case of a specific reasons (for example, illness).
Academic honesty policy:	Copying other materials during individual works, tests and final test (including the use of mobile devices) are forbidden. Abstracts must have correct text references to the literature used.
Attendance policy:	Attendance of lessons is mandatory. According to objective reasons (for instance, illness, international internship) training can take place individually (in distance form (on-line) by agreement with 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

Основна:

1. Автоматизація державного земельного кадастру: методичний посібник. С.С.Кохан, А.О. Кошель, І.М.Шквир. Київ, 2014. 46 с.
2. Кошель А.О., Кохан С.С., Новиков О.І. Конспект лекцій з дисципліни "Автоматизовані земельно-кадастрові системи": консп. лекц. Київ : ЦП "КОМПРИНТ", 2015. 20 с.
3. Земельний кодекс України : Закон України від 25.10.2001 №2768-III. URL: http://zakon3.rada.gov.ua/laws/show/2768-14. (дата звернення: 26.03.2021).
4. Про Державний земельний кадастр : Закон України від 07.07.2011 № 3613-VI. URL: http://zakon3.rada.gov.ua/laws/show/3613-17, вільний. – (дата звернення:24.04.2021)
5. Enemark, S. (2008). Environment and Land Administration - Focus on Rights, Restrictions and Responsibilities, FIG Com 7, International Symposium, Verona.
6. ESRI Parcel Fabric (2015) ArcGIS Help 10.3, http://desktop.arcgis.com/en/desktop/latest/manage-data/editing-parcels/what-is-a-parcel-fabric-.htm
7. INSPIRE Data Specification on Cadastral Parcels (2014) Technical Guidelines 3.1. URL: http://inspire.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_CP_v3.1.pdf
8. Parcel Fabric Section (2015) Operational Documents, Integrated Land Management Bureau, BC. URL: http://apps.gov.bc.ca/pub/pip/jsp/operationalpage/operdoc.jsp
9. ISO 19152 (2012) Geographic information - Land Administration Domain Model (LADM), ISO TC 211/SC, International Organization for Standardization, http://www.iso.org/iso/catalogue_detail.htm%3Fcsnumber%3D51206.
10. Національний стандарт України «ДСТУ ISO 19101:2009 Географічна інформація. Еталонна модель (ISO 19101:2002, IDT)» 2009-10-15.

Допоміжна:

11. СОУ ISO 19136:2009 "Обмінний формат геопросторових даних на основі географічної мови розмітки GML (ISO 19136:2007)" // 30.09.2010
12. СОУ 742-33739540 0012:2010 "Комплекс стандартів База топографічних даних Правила кодування та цифрового опису векторних даних" Том 2 // 30.09.2010
13. Mondal S, Bandyopadhyay J, Chakravarty D (2015) Land Information System using cadastral techniques, Mining Area of Raniganj, Barddhaman district, India. Int J Remote Sens Appl (IJRSA) 5:45–53
14. Mondal, S., Chakravarty, D., Bandyopadhyay, J. et al. GIS based Land Information System using Cadastral model: A case study of Tirat and Chalbalpur rural region of Raniganj in Barddhaman district. Model. Earth Syst. Environ. 2, 120 (2016).
15. Закон України «Про національну інфраструктуру геопросторових даних» від 19.05.2020. 2020 р., № 38, стор. 7, стаття 1237, код акта 99063/2020.
16. Cadastral surveys and records of rights of land. URL: http://www.fao.org/3/v4860e/v4860e03.htm
17. Законодавство України [Електронний ресурс]. – Режим доступу: http: http://rada.gov.ua