Міністерство освіти і науки України

Харківський національний університет імені В. Н. Каразіна

Кафедра фізичної географії та картографії

"ЗАТВЕРДЖУЮ"
Декан факультету
геології, географії, рекреації і
туризму _____
(вказати назву структурного підрозділу)
Віліна ПЕРЕСАДЬКО
(вказати П.І.Б керівника)
"02" вересня 2023 р.

# РОБОЧА ПРОГРАМА НАВЧАЛЬНОЇ ДИСЦИПЛІНИ

## CARTOGRAPHIC BASE FOR SPATIAL PLANNING

(назва навчальної дисципліни)

рівень вищої освіти другий (магістерський)

галузь знань 10 «Природничі науки»
(шифр і назва)

спеціальність 106 Географія
(шифр і назва)

освітня програма «Картографія, геоінформаційні системи і дистанційне зондування Землі»
(шифр і назва)

спеціалізація _____
(шифр і назва)

вид дисципліни обов'язкова
(обов'язкова / за вибором)

факультет геології, географії, рекреації і туризму

2023 / 2024 навчальний рік

Програму рекомендовано до затвердження вченою радою факультету геології, географії, рекреації і туризму

«28» серпня 2023 року, протокол № 11

РОЗРОБНИКИ ПРОГРАМИ: к. геогр. н. Попович Н.В.

Програму схвалено на засіданні кафедри фізичної географії та картографії
Протокол від «28» серпня 2023 року № 1

Завідувач кафедри фізичної географії та картографії

_____ (Юлія ПРАСУЛ)
(підпис) (прізвище та ініціали)

Програму погоджено з гарантом освітньо-професійної програми:

Гарант ОПП «Картографія, геоінформаційні системи і дистанційне зондування Землі»

_____ (Анатолій БАЙНАЗАРОВ)
(підпис) (прізвище та ініціали)

Програму погоджено науково-методичною комісією факультету геології, географії, рекреації і туризму
Протокол від «28» серпня 2023 року № 7

Заступник голови науково-методичної комісії
факультету геології, географії, рекреації і туризму

_____ (Юлія ПРАСУЛ)
(підпис) (прізвище та ініціали)

# INTRODUCTION

The curriculum of the discipline **"Cartographic base for spatial planning"** is compiled in accordance with the educational and professional training program of the **master's degree** "Cartography, Geographic Information Systems and Remote Sensing of the Earth», specialty 106. Geography.

## 1. Description of the discipline

1.1. The subject of study of the discipline is the principles, techniques, and tools used in cartography to provide a foundational understanding of mapping and spatial data analysis for effective spatial planning.

1.2. The purpose of teaching of the discipline is providing students with theoretical knowledge and practical skills in cartographic substantiation of spatial planning in connection with natural, social, economic, environmental, political and aesthetic aspects of spatial development.

1.3. The main tasks of teaching the discipline are providing students with: the concepts of spatial planning and modern planning systems of the world countries (including Ukraine); the knowledge of properties and features of cartographic works that serve to substantiate the spatial planning; skills of working with the cartographic works and their design; the knowledge, techniques and methods of analysis, evaluation and use of cartographic information in spatial planning, including the use of geographic information systems.

1.4. The number of credits: 4.

1.5. Total hours: 120.

| 1.5. Characteristics of the discipline | |
|---|---|
| **Normative** / optional | |
| Full-time education | Distance education |
| Preparation year | |
| 1st | 1st |
| Semester | |
| 1st | 1st |
| Lectures | |
| 32 hours | 16 hours |
| Practical, seminar classes | |
| 32 hours | 8 hours |
| Laboratory classes | |
| hours | – |
| Individual work | |
| 56 hours | 96 hours |
| Individual tasks | |
| hours | – |

1.6. Planned learning outcomes

According to the requirements of the educational program, students have to achieve the following learning outcomes:

Formed competence:

- ability to search, process and analyze information from different sources **(GC01)**;
- ability to learn and master modern knowledge **(GC02)**;
- ability to make informed decisions **(GC04)**;

- ability to work in a team **(GC05)**;
- ability to communicate in a foreign language **(GC06)**;
- ability to scientifically analyze current problems and features of interaction of nature and society with the application of principles of rational use of territorial resources, bases legislation in the field of nature management, urban and regional development and planning of territories for the development of offers from optimization of nature management and ensuring sustainable development of regions **(SC02)**;
- ability to develop and promote regional implementation programs of sustainable development, to carry out geoplanning of different hierarchical levels **(SC04)**;
- ability to carry out professional evaluation of programs, strategies and plans for spatial development, processes of globalization, regionalization and urbanization in the world, to conduct geo-ecological and socio-geographical examination and monitoring **(SC05)**;
- ability to apply in professional activities theoretical knowledge and practical skills of systems analysis and synthesis, geographical modeling and forecasting **(SC06)**;
- ability to plan, conduct and publicly present results of scientific research, provide a clear report of own knowledge, conclusions and arguments to specialists and non-specialists **(SC08)**;
- ability to apply the knowledge of cartography, to work with statistical databases, collection, generalization and processing of statistical information and its graphical visualization in geographical research **(SC10)**.

Program learning outcomes:

- apply the acquired theoretical knowledge and practical skills to study natural and socio-territorial systems at different levels of spatial organization **(PLO 01)**;
- evaluate the results of their work, demonstrate skillswork in a team **(PLO 02)**;
- be free to communicate on professional and scientific issues in foreign language **(PLO 03)**;
- carry out research and / or conduct innovative activities in order to gain new knowledge, develop new methods and procedures in geography and interdisciplinary contexts **(PLO 04)**;
- apply modern models and information technologies for conducting research and development in the field of geography, nature management, urban and regional development **(PLO 06)**;
- participate in the development of programs and strategies of the city and regional development, spatial planning of different hierarchical level **(PLO 07)**;
- assess possible risks, socio-economic and geo-environmental consequences of the implementation of management decisions in the field of nature management, urban and regional development, recreation and tourism **(PLO 11)**;
- comprehensively apply knowledge of cartography, design and use cartographic works (including web maps) in geographical research and in the process of solving professional problems **(PLO 14)**;
- use special software for data processing and obtaining new information in geographical research **(PLO 15)**.

## 2. Thematic plan of the discipline

### *Section 1. CARTOGRAPHIC BASE FOR SPATIAL PLANNING*

*Topic 1. Spatial planning: conceptual and terminological system.* Essence of the concepts of "spatial development" and "spatial planning". History of development of spatial planning in Ukraine and the world. World and European documents on spatial planning. Spatial planning system in Ukraine.

*Topic 2. The essence of the cartographic base for spatial planning.* Relationship of spatial planning with geography and cartography. Types, properties and features of cartographic works

that serve to substantiate the spatial planning. Cartographic support of development strategies of national, regional and local level. Cartographic support of functional zoning, modeling of protected areas.

### *Section 2. CARTOGRAPHIC METHOD OF RESEARCH IN SPATIAL PLANNING*

*Topic 1. Using the cartographic method for analysis and forecasting of the development of the area.* Techniques of cartographic research method, used in spatial planning. Determining the required data for solving spatial planning tasks, attributes and data connections. Modeling spatial connections (traffic routing; qualimetric assessment of the area). Analysis of social, economic, ecological condition of the area and its changes over time.

*Topic 2. The role and place of geographic information systems (GIS) in spatial planning.* GIS as spatial management tool. The use of modern computer technology in spatial planning. Regional GIS. GIS in the municipal administration. GIS-analysis of the location of objects to solve the problems of spatial management: creating interactive maps.

## 3. The structure of the discipline

| Name of sections and topics | Number of hours | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | full-time education | | | | | | distance education | | | | | |
| | Total | including | | | | | Total | including | | | | |
| | | lec | pr | lab | | ind | | lec | pr | lab | | ind |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| ***Section 1. CARTOGRAPHIC BASE FOR SPATIAL PLANNING*** | | | | | | | | | | | | |
| Topic 1 | 30 | 8 | 8 | – | – | 14 | 30 | 4 | 2 | | | 24 |
| Topic 2 | 30 | 8 | 8 | – | – | 14 | 30 | 4 | 2 | | | 24 |
| **Total for Section 1** | **60** | **16** | **16** | **–** | **–** | **28** | **60** | **8** | **4** | | | **48** |
| ***Section 2. CARTOGRAPHIC METHOD OF RESEARCH IN SPATIAL PLANNING*** | | | | | | | | | | | | |
| Topic 1 | 30 | 8 | 8 | – | – | 14 | 30 | 4 | 2 | | | 24 |
| Topic 2 | 30 | 8 | 8 | – | – | 14 | 30 | 4 | 2 | | | 24 |
| **Total for Section 2** | **60** | **16** | **16** | **–** | **–** | **28** | **60** | **8** | **4** | | | **48** |
| ***Total hours*** | ***120*** | ***32*** | ***32*** | – | – | ***56*** | ***120*** | ***16*** | ***8*** | | | ***96*** |

## 4. Topics of practical classes

| № | Name of the topic | Number of hours | |
|---|---|---|---|
| | | full-time education | distance education |
| 1 | Cartographic substantiation of spatial planning in European countries | 8 | 2 |
| 2 | Cartographic modeling of the national nature park | 8 | 2 |
| 3 | Cartographic substantiation of the unification of territorial communities in Ukraine | 4 | 1 |
| 4 | Analysis of spatial differentiation of united territorial communities | 4 | 1 |
| 5 | Creating an interactive map of a capable network of primary health care (PHC) provision | 8 | 2 |
| | **Total** | **32** | **8** |

## 5. Tasks for individual work

| № | Types, content of the individual work | Number of hours | |
|---|---|---|---|
| | | full-time education | distance education |
| 1 | Study global and European documents on spatial planning: United Nations Human Settlements Programme; European Regional / Spatial Planning Charter (Torremolinos Charter); Guiding Principles for Sustainable Spatial Development of the European Continent; The EU Compendium of Spatial Planning Systems and Policies; Territorial Agenda of the European Union 2020 | 7 | 12 |
| 2 | Deepen knowledge about legislative support of spatial planning in Ukraine, namely: state building norms of Ukraine; General scheme of planning of the territory of Ukraine; types of urban planning documentation; schemes of planning the territory of regions, districts; zoning plans and detailed territorial plans | 7 | 12 |
| 3 | According to literary sources, deepen knowledge on the topic: properties and features of cartographic works that justify spatial planning | 7 | 12 |
| 4 | Analyze the cartographic support of regional development strategies of Ukraine to 2020 | 7 | 12 |
| 5 | Find the information on the application of the cartographic method to solve the problems of spatial planning: creating a map of land use for evaluation and planning; monitoring of water supply management of relevant network devices; solving telecommunication problems on the placement of new cellular devices, etc. | 7 | 12 |
| 6 | In-depth study of the topic: Route planning in ArcGIS | 7 | 12 |
| 7 | Deepen knowledge of the history of GIS application in applied tasks of spatial management, relevant research and in certain areas of business | 7 | 12 |
| 8 | According to literature and Internet sources find specific examples of the usage of GIS in regional and municipal management | 7 | 12 |
| | **Total** | **56** | **96** |

## 6. Individual tasks

Not provided for in working curricula.

## 7. Teaching methods

The following teaching methods are used: verbal (conversations, lectures), visual (illustration, demonstration), practical (practical work).

According to the concept of mixed learning at Karazin University, lectures and practical classes can be held face-to-face or online using the Zoom video conferencing platform in accordance with the martial law and other circumstances. Students are given questions for self-examination and self-control. All materials and educational and methodological complex are presented in Office365. Individual and group consultations can take place remotely (using Zoom, Telegram, e-mail, etc.).

## 8. Methods of control

Methods of control include: theoretical defense of practical works; current express survey based on lecture topics; participation in discussions during lectures and practical classes; current control work to check the mastering of the course material.

## 9. Scoring scheme

| Current check and individual work | | | | | | Final Test | Total |
|---|---|---|---|---|---|---|---|
| Section 1 | | Section 2 | | Intermediate test | Total | | |
| *Topic 1* | *Topic 2* | *Topic 1* | *Topic 2* | | | | |
| 10 | 10 | 20 | 10 | 10 | 60 | 40 | 100 |

In order to be admitted to passing the final test in this academic discipline, the student must score at least **30 points out of 60** during the current check and individual work.

### Assessment criteria

*Practical works* on the discipline are assessed as follows:

| Practical works | Number of points | Evaluation criteria |
|---|---|---|
| PW1 | 10 | 2 points – completeness of the description of the spatial planning system in Europe;<br>2 points – illustration of the report with cartographic works used in the spatial planning of Europe;<br>2 points – the quality of the presentation;<br>2 points – logic and structure of the report;<br>2 points – answers to questions, participation in the general discussion |
| PW2 | 10 | 2 points – description of the area of NPP modeling;<br>2 points – justification of the projected boundary of the NNP;<br>2 points – justification of the choice of sites for the functional zones of the NNP;<br>2 points – the quality of cartographic materials;<br>2 points – theoretical defense of the work |
| PW3 | 10 | 4 points – correctness and completeness of the used technique;<br>4 points – the quality of prepared cartographic materials;<br>2 points – theoretical defense of the work |
| PW4 | 10 | 4 points – implementation of UTC typing;<br>4 points – the quality of mapping according to the results of |

| | | |
|---|---|---|
| | | UTC typing;<br>2 points - theoretical defense of the work |
| PW5 | 10 | 4 points – quality and completeness of the geographical basis;<br>4 points – mapping of areas covered by the existing network of PHC;<br>2 points – theoretical defense of the work |

If the student submits practical work after the term, he or she loses 50% of points.

The *intermediate test* is estimated at 10 points. The weight of each question is indicated in the test form. The intermediate test consists of test questions (7 points in total) and 1 open-ended question which is worth 3 points. Students get 2 points for the correctness of the content of the answer and 1 point – for the structure and logic of the answer.

The *final test* is estimated at 40 points. The weight of each question is indicated in the test form. The final test consists of 10 test questions (1 point each), 10 questions with a short answer (1 point each) and 10 open-ended questions which are worth 2 points each. For open-ended questions students get 1 point for the correctness of the content of the answer and 1 point – for the structure and logic of the answer.

**Rating scale**

***For credits***

| The sum of points for all types of educational activities during the semester | Score on a national scale (for credits) |
|---|---|
| 90-100 | Pass |
| 70-89 | |
| 50-69 | |
| 1-49 | Fail |

## 10. Recommended reading


1. Dühr S. The Visual Language of Spatial Planning. Exploring Cartographic Representations for Spatial Planning in Europe / S. Dühr. – Routledge, 2007. – 216 p.
2. An Agenda for a Reformed Cohesion Policy. A place-based approach to meeting European Union challenges and expectations. Barka F. 2009. – Available at : http://www.europarl.europa.eu/meetdocs/2009_2014/documents/regi/dv/barca_report_/barca_report_en.pdf.
3. Council of Europe. European heritage. Sustainable Development Strategies in South-East Europe / R. Pickard, ed. – Council of Europe Publishing, 2008. – 221 p.
4. EUROPE 2020: A European Strategy for Smart, Sustainable and Inclusive Growth. – Available at : http://ec.europa.eu/eurostat/web/europe-2020-indicators
5. European Environmental Bureau (EEB). EU Sustainable Development Strategy. From Theory to Delivery / J. Hontelez, M. Buntenkamp. – Brussels : European Environmental Bureau, 2006. – 66 p.
6. Indicators of Sustainable Development : Guidelines and Methodologies, 3rd Edition. – UNDESA : New York, 2007. – 93 p.

**7.** Von Weizsaecker, E. Come On! Capitalism, Short-termism, Population and the Destruction of the Planet / E. von Weizsaecker, A. Wijkman. – Springer, 2018. – 220 p.

## 11. Links to information sources on the Internet, video lectures, other methodological support

**1.** Declaration of the United Nations Conference on the Human Environment [Електронний ресурс]. – Available at : http://www.unep.org/Documents.Multilingual
**2.** Atlas of Sustainable Development Goals 2017. – Available at : http://datatopics.worldbank.org/sdgatlas/
**3.** European Sustainable Development Network. – Available at : http://www.sd-network.eu/
**4.** Guiding Principles for Sustainable Spatial Development of the European Continent. – CEMAT, 2000. – Available at : http://www.rapp.gov.rs/en-GB/documents/cid30383164/guiding-principles-for-sustainable-spatial-development-of-the-european-continent.
**5.** Maps and Sustainable Development Goals. – Available at : http://icaci.org/maps-and-sustainable-development-goals/
**6.** Report of the World Comission on Environment and Development: Our common future. – Available at : http://www.un-documents.net/our-common-future.pdf
**7.** The United Nations Commission on Sustainable Development / Sustainable Development Knowledge Platform. – Available at : https://sustainabledevelopment.un.org/csd.html