

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

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METHODOLOGICAL RECOMMENDATIONS
for practical classes and organizing independent work
on an academic discipline

«SHAPE FORMATION OF MULTIFUNCTIONAL BUILDINGS»

*(for students second (master's) level of higher education full-time studies
specialty`s 191, G17 – Architecture and town planning)*

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INTRODUCTION

The study of the discipline is based on the mandatory educational components of the second (master's) level of higher education, namely: "Modern problems of architecture, urban planning and design of architecture environment", "Theories of architecture and urban planning of the newest era", "Architectural design of multifunctional public buildings".

The «**Shape formation of multifunctional buildings**» academic discipline consists of following content modules (CM):

CM 1 Techniques for designing multifunctional buildings.

CM 2 Methods of designing multifunctional buildings.

CM 3 Spatial planning organization of multifunctional buildings.

The purpose of studying the "Shape formation of multifunctional buildings" academic discipline is the development of scientific and theoretical knowledge and skills of students regarding the ability to determine the typology and specifics of the design of modern multifunctional objects; the ability to develop new concepts for the formation of multifunctional buildings and their placement in the urban environment, and to use design techniques and methods when organizing the spatial planning solutions of multifunctional buildings.

As a result of mastering this discipline, students must be able to think scientifically and analyze, systematize and use theoretical works and grapho-analytical design materials regarding techniques and methods of forming multifunctional buildings; be aware of the latest concepts of architectural design of modern multifunctional buildings for various purposes, their specific features, typological characteristics and form-making design processes for the application of high-quality design solutions in architecture and urban planning.

1 CONTENT OF ACADEMIC DISCIPLINE BY CONTENT MODULES AND THEMES

MODULE 1 SHAPE FORMATION OF MULTIFUNCTIONAL BUILDINGS

Content module 1

Techniques for designing multifunctional buildings

The content module provides the introduction of students to the main definitions of multifunctional buildings within the framework of modern scientific architectural and urban planning significance. Modern techniques for designing multifunctional architectural objects as elements of the hierarchical system of urban planning space are analyzed. The main techniques for placing multifunctional buildings in the structure of a region, city, district are studied.

Content module 2

Methods of designing multifunctional buildings

The content module provides the introduction of students to the main methods of designing multifunctional buildings in the system of urban planning spaces and the structural elements of the spatial organization of multifunctional objects for various purposes. The specific features of the formation of the spatial structure of multifunctional buildings and the latest approaches to the formation of multifunctional objects in the architectural environment of cities are considered.

Content module 3

Spatial planning organization of multifunctional buildings

The content module provides the introduction of students to the scientific theoretical experience of forming the planning structure of multifunctional buildings and their influence on the spatial organization of such objects in the urban environment. The features of the formation of the main structural elements of modern multifunctional buildings are determined. The latest approaches and modern trends in the spatial organization of multifunctional objects and their placement in the structure of a city are considered.

2 ORGANIZATIONAL AND METHODOLOGICAL RECOMMENDATIONS

The teaching methodology of the “**Shape formation of multifunctional buildings**” academic discipline involves working in dialogue between the teacher and the students and is designed for 16 hours of lectures, 32 hours of practical classes, and 72 hours of independent work.

To help students understand the structure of the academic discipline and the connection between practical classes and independent work with lecture classes, the following section is presented in the form of structural and content tables, which include information about the content, structure, distribution of hours by topics and types of classes, and recommendations for completing practical tasks and organizing independent work.

3 ORGANIZATIONAL STRUCTURE AND CONTENT OF PRACTICAL CLASSES

Practical class is a form of educational training aimed at developing skills and abilities to perform certain types of work. For each topic, the teacher conducts practical classes (Table 1), in which he develops the skills and abilities of students to practically apply certain theoretical provisions of the academic discipline through individual completion of grapho-analytical tasks.

Table 1 – Organizational structure and content of practical classes

Type of educational class	Hours	Topics, content and methodological guidelines for conducting practical classes
1	2	3
Module 1 Shape formation of multifunctional buildings		
Content module 1		
Techniques for designing multifunctional buildings		
Theme 1 Basic concepts and definitions of multifunctional buildings and their placement in the structure of urban spaces	2	Definition of the concept of a multifunctional building as an element of the hierarchical system of urban space. Analysis of the main technological processes in the planning structure of multifunctional objects and their specific characteristics. Analysis of the spatial structure of modern multifunctional buildings in the environment

Continuation of table 1

1	2	3
Practical class Theme 1 Analysis of the formation of multifunctional buildings in the structure of urban spaces	4	Conducting analysis of the formation of multifunctional buildings in the structure of a city; definition and analysis of the main spatial structures of multifunctional buildings; developing variants of functional program, construction of multifunctional buildings, their comparison and placement in the city. Task is performed in the form of graphic works on 1–2 sheets of A3 format
Independent work	9	Study of literature and analysis of information resources on the topic of task 1. Finalization of graphic tasks and corresponding writing of an essay on the topic of the practical class; preparing the album with illustrative (graphic) and the essay with text (written) materials
Theme 2 Basic techniques for designing multifunctional buildings in the structure of a city	2	Formation of multifunctional buildings and their architectural and urban significance. Analysis of the main methods of designing multifunctional objects in the structure of cities. Identifying modern methods of forming multifunctional buildings and their town planning significance
Practical class Theme 2 Determination of the main techniques for the formation of multifunctional buildings in the architectural environment	4	Determination of the main methods of construction of multifunctional facilities, their analysis and features of their placement in the structure of a city; analysis of technological processes in the structure of multifunctional objects and their development; development of design options for placement of multifunctional buildings in urban areas. Task is performed in the form of graphic works on 1–3 sheets of A3 format
Independent work	9	Determining main methods of forming multifunctional objects, scientific and theoretical analysis of literature and scientific works on the topic of task 2. Finalization of graphic tasks and writing of an essay on the topic of the practical lesson; preparing the album with illustrative (graphic) materials and the essay with text (written) materials

Continuation of table 1

1	2	3
Content module 2 Methods of designing multifunctional buildings		
Theme 3 Basic methods of designing multifunctional buildings in the system of urban space	2	Analysis of the basic methods of forming multifunctional buildings and complexes in the existing environment. Determining the specifics in the formation of multifunctional objects in the structure of cities. Analysis of typological characteristics in the formation of a multifunctional object
Practical class Theme 3 Using methods of design of multifunctional buildings in the urban planning space system	4	Analysis of general methods of designing multifunctional objects in the urban environment and their features; comparison of methods of designing multifunctional objects in the system of a city; graphic analysis of analogues and examples of latest multifunctional objects. Task is performed in the form of graphic works on 1–3 sheets of A3 format
Independent work	9	Study of literature and information resources on the topic of task 3. Finalization of graphic tasks and an essay on the topic of the practical class; preparing the album with illustrative (graphic) materials and the essay with text (written) materials
Theme 4 The latest approaches and methods of forming multifunctional objects in the architectural environment	2	Identifying latest approaches and methods in the formation of multifunctional buildings. Use of systemic approaches in the design of multifunctional objects. Analysis of modern methods of forming multifunctional buildings in the urban environment
Practical class Theme 4 Analysis of the latest approaches to the formation of multifunctional buildings in the urban environment	4	Using the latest approaches to the formation of multifunctional objects and developing one's own conceptual model of a multifunctional object in the structure of cities. Task is performed in the form of graphic works on 1–2 sheets of A3 format
Independent work	9	Study of literature and information resources on the topic of task 4. Finalization of graphic tasks and an essay on the topic of the practical class; preparing the album with illustrative (graphic) materials and the essay with text (written) materials

Continuation of table 1

1	2	3
Content module 3		
Spatial planning organization of multifunctional buildings		
Theme 5 Theoretical and practical experience in forming the spatial planning structure of multifunctional buildings	2	Analysis of theoretical experience in the formation of the spatial-planning structure of multifunctional buildings. Analysis of practical experience in the formation of the spatial-planning structure of multifunctional buildings. Identifying the main trends in the formation of spatial-planning organization of multifunctional objects in Ukraine
Practical class Theme 5 Analysis of theoretical and practical experience in the formation of the spatial planning structure of multifunctional buildings	4	Identification of analogues and examples of theoretical and practical experience in the formation of the spatial planning structure of multifunctional buildings at different urban planning levels; determination of the most characteristic examples of the formation of the spatial planning organization of multifunctional objects in the existing urban environment. Task is performed in the form of graphic works on 1–2 sheets of A3 format
Independent work	5	Study of literature and information resources on the topic of task 5. Finalization of graphic tasks and an essay on the topic of the practical class; preparing the album with illustrative (graphic) materials and the essay with text (written) materials)
Theme 6. Regularities of formation of spatial structures of multifunctional buildings	2	Analysis of typological features of spatial organization of multifunctional buildings. Analysis of specific peculiarities of modern spaces of multifunctional buildings. Determining the regularities of the formation of spaces of multifunctional buildings.
Practical class Theme 6 Determining the main regularities of the formation of spatial structures of multifunctional buildings	4	Analysis of the specifics of spatial organization of multifunctional buildings (formation of spatial structures); determining the main regularities of the formation of multifunctional buildings (a brief assessment of spatial structures, their analysis and grapho-analytic comparison. Task is performed in the form of graphic works on 1-2 sheets of A3 format

Continuation of table 1

1	2	3
Independent work	5	Study of literature and information resources on the topic of task 6. Finalization of graphic tasks and an essay on the topic of the practical class; preparing the album with illustrative (graphic) materials and the essay with text (written) materials)
Theme 7 Architectural and artistic features of designing multifunctional buildings	2	Analysis of the main planning schemes for the design of multifunctional buildings. Determining the compositional features of the design of multifunctional buildings. Analysis of the architectural and artistic features of the design of multifunctional buildings
Practical class Theme 7 Identifying architectural and artistic features of the design of multifunctional buildings	4	Analysis of the compositional features of the spatial organization of multifunctional buildings (analytical planning schemes, exterior, figurative solution, integration into the environment); defining the aesthetics of main structures of multifunctional objects (a brief assessment of the planning features of the given examples). Task is performed in the form of graphic works on 1–2 sheets of A3 format
Independent work	5	Study of literature and information resources on the topic of task 7. Finalization of graphic tasks and an essay on the topic of the practical class; preparing the album with illustrative (graphic) materials and the essay with text (written) materials)
Theme 8 Innovative approaches to spatial planning organization of multifunctional buildings	2	Identifying promising directions for the formation of multifunctional buildings in the structure of urban spaces. Identifying innovative approaches to the spatial planning structure of multifunctional buildings and their placement in the urban environment
Practical class Theme 8 Development of a concept idea for the spatial planning organization of a modern multifunctional object in the structure of a city сучасного міста	4	Development of a sketch spatial model of a multifunctional object in the structure of a city (identification of the latest approaches to formation, definition of main functions, technologic processes, their connections and innovative opportunities in the architectural design of a multifunctional object). Task is performed in the form of graphic works on 1–2 sheets of A3 format

Conclusion of table 1

1	2	3
Independent work	6	Study of graphic examples, analogues and 3D models of the latest objects in modern digital resources on the topic of task 8. Developing one's own concept idea for the spatial and planning organization of a modern multifunctional building in the structure of an existing city (3D model), on A3 format
Final semester control	15	
Total hours	120	–

4 REQUIREMENTS FOR WRITING AN ESSAY

The essay should have a volume of up to 25 pages, with font Times New Roman, 14 pt, and interval of 1.5. The content of the essay should include:

- formulation of the topic, its relevance and justification. Problematic issues are highlighted in a general scientific and practical sense; examples, graphic diagrams and analytical models are given regarding the subject of the main research questions, as well as the connection with the scientific and practical tasks of the research;

- setting the research objective, which should be aimed at solving the problem identified in the introduction and correspond to the title, be clear and understandable. It highlights what results the achievement of this objective will yield;

- a brief analysis of analogues, information and literature over the last 5-10 years, in which a solution to the problem is provided and on which the author relies;

- identifying the problem and formulating a research inquiry;

- outlining possible ways to solve issues related to the formation of modern multifunctional objects in urban spaces;

- conclusions of the theoretical part;

- list of references (at least 15 references, formatted in accordance with SSU 8302:2015 and submitted as a numbered list, with DOI if available);

- graphic materials (illustrations, grapho-analytical schemes, figures, models) should be numbered, have a title and be placed after the first reference to them in the text, for example, (Fig. 1), (Table 1) or in the Appendices (Appendix A). Captions on figures and tables should use Times New Roman, 14 pt.

5 CONTROL METHODS AND CRITERIA FOR ASSESSING LEARNING OUTCOMES

The main control methods for the academic discipline are:

1. Current control: in the form of written control (making essay) and graphic control (making album of graphic tasks on selected topics).
2. Module control: in the form of oral control (presentation and defense of graphic tasks on the topics of the module).
3. Final semester control: in the form of a differentiated test (presentation and public defense of a concept idea).

Assessment criteria for module control

Two components are objects of the assessment:

1. Quality of the content of the graphic task (graphic illustrations and 3D models).
2. Quality of the defense of the graphic task (preparation, presentation, answers).

The quality of the completed practical task is assessed by a number of indicators:

- compliance of the content of the practical work with the task and the requirements of the methodological recommendations for its implementation;
- the degree of independence in solving the task, making general schemes of typological characteristics of the object, relevant drawings, analysis of 3D models, graphic images and design proposals for its shape formation;
- ability to work with literature and information sources and analyze graphic illustrations, relevant analytical diagrams and 3D models;
- design of graphic materials according to the compositional design.

The quality of the defense of the practical task is assessed by following criteria:

- meaningfulness of the applicant's report on the main results of the tasks;
- clarity of structure and logical sequence of presentation of the material;
- validity and quality of the visual presentation of graphic tasks regarding the further use of the results of the work;

- use of professional, industry, scientific terminology;
- completeness, depth, scientific validity of answers to questions.

When assessing module control, appropriate assessment levels are used with the maximum number of points corresponding to the content module. The following levels are used:

1. High level (tasks completed correctly);
2. Sufficient level (tasks completed with minor errors);
3. Medium level (tasks completed with significant errors);
4. Initial level (tasks completed incorrectly).

Assessment criteria for final semester control (diff. credit)

Final semester control is in the form of differentiated credit (presentation and public defense of the concept idea) (Table 2).

Table 2 – Final semester control

Final semester control – differentiated credit	30
Preparing presentation of the concept idea	20
Public defense of the concept idea	10

Assessment criteria for final semester control:

1. The higher education applicant has mastered the theoretical material fully, demonstrates deep comprehensive knowledge of the topic, confidently navigates the course content, thinks logically and consistently, and answers all test questions.: «high level» (27–30 points).
2. The higher education applicant has mastered the theoretical material well, presents it in a reasoned manner, is familiar with the content of the test questions, expresses his/her thoughts, but makes certain inaccuracies and minor errors.: «sufficient level» (20–26 points).
3. The higher education applicant understands the fundamentals on the topics of the course, is poorly oriented in the content of the test questions, reflects the problem in a superficial manner, and demonstrates an insufficient level of mastery of theoretical material: «medium level» (11–19 points).

4. The higher education applicant has fragmentary knowledge of the topic, is not familiar with the content of the test questions, and makes a significant number of mistakes: «initial level» (1–10 points).

Assessment criteria on a 100-point scale

The results of studying the discipline are assessed according to the national (four-point) scale (excellent, good, satisfactory, unsatisfactory); 100-point system; unified (seven-point) rating scale – “excellent” (A), “good” (B, C), “satisfactory” (D, E), “unsatisfactory” (FX, F). The correspondence of score on a 100-point scale to the level of competence is given in Table 3.

Table 3 – Grading scale

100-point scale	Level of competence	Four-point/two-point scale	
		exam	test
90–100	high	excellent	passed
82–89	sufficient	good	
74–81			
64–73	average	satisfactory	
60–63			
35–59	low	unsatisfactory	failed
0–34			

90-100 points – applicants receive for a high (excellent) level of knowledge (minimal inaccuracies are possible) of educational material of the educational component; they demonstrate the ability to analyze and use the acquired knowledge in decision-making in the relevant subject area, apply theoretical provisions when solving practical problems; clearly, succinctly, logically, consistently answer/solve the questions/tasks.

82-89 points – applicants receive for a very good level of knowledge (a small number of inaccuracies is possible) of educational material of the educational component above the average level; reasoned answers/solutions to the questions/tasks, ability to apply theoretical provisions when solving practical problems.

74-81 points – applicants receive for a generally correct (good) understanding of educational material of the educational component; answering/solving the questions/tasks and applying theoretical provisions when solving practical problems with certain (insignificant) shortcomings.

64-73 points – applicants receive for mediocre knowledge of educational material of the educational component, poorly reasoned answers, the presence of errors in solving tasks, weak application of theoretical provisions when solving practical problems.

60-63 points – applicants receive for weak knowledge of educational material of the educational component, inaccurate or poorly reasoned answers with a violation of the sequence of presentation, the presence of significant errors in solving tasks, weak application of theoretical provisions when solving practical problems.

35-59 points – applicants receive for ignorance of a significant part of educational material of the educational component, significant errors in answers/tasks, inability to apply theoretical provisions when solving practical problems.

0-34 points – applicants receive for ignorance of the main fundamental provisions of educational material of the educational component, inability to answer/solve the questions/tasks, inability to orientate in elementary ways when solving practical problems.

RECOMMENDED LITERATURE AND INFORMATION RESOURCES

1. ДБН Б.2.2–12:2019 Планування і забудова територій [Електрон. ресурс]. – Чинний від 2019–10–01. – Електрон. текст. дані. – Київ : Мінрегіон України, 2019. – 177 с. – (Державні будівельні норми України). – Режим доступу : <https://dreamdim.ua/wp-content/uploads/2019/07/DBN-B22-12-2019.pdf>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

2. ДБН В.2.2-15:2019 Будинки і споруди. Житлові будинки. Основні положення. Зі Зміною № 1 [Електрон. ресурс]. – Чинний від 2022–09–01. – Електрон. текст. дані. – Київ : Мін-во розв. громад та тер. України, 2022. – 53 с. – Режим доступу: https://dreamdim.ua/wp-content/uploads/2019/08/DBN_V-2-2-15-2019.pdf, вільний (дата звернення: 25.01.2026). – Назва з екрана.

3. ДБН В.2.2-9:2018 Будинки і споруди. Громадські будинки і споруди. Основні положення [Електрон. ресурс]. – Чинний від 2022–09–01. – Електрон. текст. дані. – Київ : Мінрегіон України, 2022. – 43 с. – Режим доступу: https://dreamdim.ua/wp-content/uploads/2019/03/DBN_V-2-2-9-2018-Gromadski-budynky.pdf, вільний (дата звернення: 25.01.2026). – Назва з екрана.

4. ДБН В.2.2-16:2019 Будинки і споруди. Культурно-видовищні та дозвіллеві заклади [Електрон. ресурс]. – Чинний від 2019–11–01. – Електрон. текст. дані. – Київ : Міністерство регіонального розвитку, будівництва та житлово-комунального господарства України, 2019. – 93 с. – Режим доступу: <https://dreamdim.ua/wp-content/uploads/2019/01/DBN-V.2.2-16-201X.pdf>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

5. ДБН В.2.3-5:2018 Вулиці та дороги населених пунктів. Зі Зміною № 1» [Електрон. ресурс]. – Чинний від 2022–09–01. – Електрон. текст. дані. – Київ : Мінрегіон України, 2022. – 61 с. – Режим доступу: <https://dreamdim.ua/wp-content/uploads/2018/08/DBN-V23-5-2018.pdf>, вільний (дата звернення: 25.01.2026). – Назва з екрану.

6. ДБН В.2.3.-15:2007 Споруди транспорту. Автостоянки і гаражі для легкових автомобілів. Із Зміною № 1, Зміною № 2 та Зміною № 3 [Електрон.

ресурс]. – Чинний від 2022–09–01. – Електрон. текст. дані. – Київ : Мін-во розв. гром. та тер-рій України, 2022. – 47 с. – Режим доступу: <https://dreamdim.ua/wp-content/uploads/2019/01/DBN-V.2.3-15-2007.pdf>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

7. ДК 018-2000 Державний класифікатор будівель і споруд [Електрон. ресурс]. – Електрон. текст. дані. – Київ : Держстандарт України, 2000. – Режим доступу: <https://zakon.rada.gov.ua/rada/show/va507565-00#Text>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

8. ДБН В.2.2-40:2018 Інклюзивність будівель і споруд. Основні положення. Із Зміною № 1 та Зміною № 2 [Електрон. ресурс]. – Чинний від 2025–05–01. – Електрон. текст. дані. – Київ : Мінрозвитку, 2025. – 94 с. – Режим доступу: https://dreamdim.ua/wp-content/uploads/2022/08/Zmina1-DBN-V_2_2-40-2018.pdf, вільний (дата звернення: 25.01.2026). – Назва з екрана.

9. ДБН В.1.1-7:2016 Пожежна безпека об'єктів будівництва [Електрон. ресурс]. – Чинний від 01.06.2017. – Електрон. текст. дані. – Київ: Мінрегіон України, 2017. – 41 с. – Режим доступу: <https://dbn.co.ua/load/normativy/dbn/1-1-0-88>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

10. ДБН В 2.2-20:2008 Будинки і споруди. Готелі. Зі змінною № 1. [Електрон. ресурс]. – Чинний від 2019–10–01. – Електрон. текст. дані. – Київ : Мінрегіонбуд України, 2019. – 51 с. – Режим доступу: https://ammokote.com/wp-content/uploads/2024/08/dbn_v_2_2_20_2008.pdf, вільний (дата звернення: 25.01.2026). – Назва з екрана.

11. Посацький Б. С. Архітектурний образ міста [Електрон. ресурс] : навч. посіб. / Б. С. Посацький, Є. І. Король, Г. Є. Кознарська. – Електрон. текст. дані. – Львів : Видавництво Львівської політехніки, 2019. 140 с. – Режим доступу: <http://vlp.com.ua/node/19349>, вільний (дата звернення: 25.01.2026), вільний (дата звернення: 25.01.2026). – Назва з екрана.

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Electronic text data. – Regime of access: <https://www.mdpi.com/2071-1050/13/5/2915>, free (date of the application: 25.01.2026). – Header from the screen.

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14. Успенський М. С. Обумовленість поняття «складність» у термінології сучасного архітектурного формоутворення [Електрон. ресурс] / М. С. Успенський, В. В. Нестеренко // Український журнал будівництва та архітектури. – № 1 (013) – Електрон. текст. дані. – 2023. – С. 102–110. – Режим доступу: <https://doi.org/10.30838/J.BPSACEA.2312.280223.102.924>, вільний (дата звернення: 25.01.2026). – Назва з екрана.

15. Svitlana Chepurna. Urban Design Principles as Tools of Urban Area Sustainable Development for Creating Pedestrian Space: Case of Poltava (Ukraine) [Electronic resource] / Svitlana Chepurna, Tatyana Zhidkova, Olha Popova and Olena Dudka. – Lecture Notes in Networks and Systems. – 808 LNNS – Electronic text data. – 2023. – P. 98–108. – Regime of access: https://link.springer.com/chapter/10.1007/978-3-031-46877-3_9, free (date of the application: 25.01.2026). – Header from the screen.

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