Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Construction and Transport
Department of Architecture and Engineering Surveys

Syllabus of the Educational Component

EC 8 Integrated Architectural and Research Design

Implemented within the educational program
Architecture and Urban Planning

under specialty G 17 Architecture and Urban Planning.

at the second level of higher education.

Sumy – 2025

Developer: **A.S. Borodai, Associate Professor, PhD in Architecture**

Reviewed and approved at the meeting of the Department of Architecture and Engineering Surveys	Minutes from June 4, 2025 No. 14
	Head of Department **D.S. Borodai**

Approved:
Educational Program Guarantor Artem BORODAI

Dean of the faculty implementing the educational program Oleksandr SOLAROV

Review of the syllabus provided by Oleksandr Cherednichenko.

Methodologist of the Department for Education Quality, Licensing and Accreditation ( )

Registered in the electronic database: date: 01.07 2025

Information about the Review of the Working Program (Syllabus):

Academic year in which changes are made	Appendix number to the working program describing changes	Changes reviewed and approved		
		Date and protocol number of the department meeting	Head of Department	Program guarantor

1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT

1.	EC name	EC 8 Integrated Architectural Research Design			
2.	Faculty / Department	Faculty of Construction and Transport, Department of Architecture and Engineering Surveys			
3.	Status of the EC	Mandatory component			
4.	Program / Specialty (programs) of which the EC is a part (to be filled in for mandatory ECs)	Educational and professional program "Architecture and Urban Planning", Second (Master's) level of higher education in specialty G17 "Architecture and Urban Planning", Qualification: Master of Architecture			
5.	The EC can be offered for (to be filled in for elective ECs)				
6.	Level of the NQF	Level 7			
7.	Semester and duration of study	Full-time – 3rd semester, 15 weeks			
8.	Number of ECTS credits	5			
9.	Total number of hours and their distribution	Contact work (classes) Full-time			Independent work
		Lectures -	Practical / seminars 74	Laboratory -	76
10.	Language of instruction	English			
11.	Lecturer / Coordinator of the educational component	PhD in Architecture, Associate Professor Borodai Artem Serhiiovych			
10.1	Contact information	Office 431e; tel. +380996447904; tyomaboroday@gmail.com			
12.	General description of the educational component:	The educational component "Integrated Architectural Research Design" is part of the Master of Architecture training, aimed at comprehensive mastering of the principles of organizing the material and spatial environment, which involves simultaneous development of urban planning, functional-planning, structural, socio-economic, and architectural-artistic tasks in the implementation of architectural projects. Special attention within the course is given to the integration of sustainable development principles in design solutions, including efficient use of resources, environmental preservation, energy efficiency, social inclusion, and cultural sustainability. The educational process is oriented toward achieving the UN Sustainable Development Goals (SDGs), in particular such as Sustainable Cities and Communities (SDG 11), Climate Action (SDG 13), Responsible Consumption (SDG 12), and Quality Education (SDG 4), which shapes students' responsible attitude to the spatial environment and readiness to implement innovative, environmentally, and socially oriented approaches in architectural practice.			
13.	Purpose of the educational component	Consolidation and deepening of theoretical and practical knowledge and skills of comprehensive design of urban planning and volumetric-spatial solutions of architectural objects taking into account a comprehensive scientific approach and sustainable development principles, in particular			

		ecological balance, energy efficiency, social responsibility, and economic feasibility.
14.	Prerequisites for studying the EC, relation to other educational components of the program	The educational component is based on knowledge from the following educational components: Legislation in Architecture and Basics of Design Practice, Methodology of Scientific Research in Architecture and Urban Planning, Innovative Structural Solutions and Materials, Energy Efficiency and Environmental Solutions in Architecture, Architectural Design and Improvement of Multifunctional Complexes, Reconstruction of Architectural Objects in the Urban Environment, Design-Research and Pre-Certification Practice. The educational component serves as a basis for such components as Qualification (Professional) Certification
15.	Academic integrity policy	Compliance with academic integrity for higher education students involves: independent completion of learning tasks, current and final assessment tasks; referencing sources when using ideas, statements, information; compliance with copyright legislation; providing reliable information about the results of their own learning or research activities. Violations of academic integrity in studying the EC "Architectural Design" include: academic plagiarism, academic fraud (cheating, deception, submitting someone else's work as own), use of electronic devices during final assessment. For violations of academic integrity, students may face the following academic penalties: **Academic plagiarism** – grade 0, repeated assignment completion. **Academic fraud** – annulment of obtained scores; repeated assessment; repeated completion of work not done independently. Use of electronic devices during final assessment – removal from work, grade 0, repeated final assessment.
16.	Keywords	architectural design, urban planning, volumetric-spatial solution, sustainable development, energy efficiency, functional-planning organization, architectural composition, innovative technologies
17.	ink to the course in Moodle system	https://cdn.snau.edu.ua/moodle/course/view.php?id=5137

2. LEARNING OUTCOMES FOR THE EDUCATIONAL COMPONENT AND THEIR CONNECTION TO THE PROGRAM LEARNING OUTCOMES

Learning Outcomes for the Educational Component: After completing the educational component, the student is expected to...	Program Learning Outcomes targeted by the EC (indicate the number according to the numbering in the educational program)[1]								How the Learning Outcomes are Assessed
	LO_{03}	LO_{04}	LO_{06}	LO_{07}	LO_{08}	LO_{11}	LO_{12}	LO_{16}	
DLO 1. Ability to analyze initial data for the design of urban planning and volumetric-spatial objects, applying a comprehensive scientific approach considering the principles of sustainable development and ecological balance.		+		+	+	+		+	Creative and calculation-practical assignment, modular architectural project, credit (pass/fail assessment)
DLO 2. Ability to solve the problem of functional zoning of urban planning objects, residential and public buildings		+	+	+		+			Creative and calculation-practical assignment, modular architectural project, credit (pass/fail assessment)
DLO 3. Ability to develop master plans for architectural objects in accordance with the requirements of current regulations.	+		+					+	Creative and calculation-practical assignment, modular architectural project, credit (pass/fail assessment)
DLO 4. Ability to solve functional-planning and form-compositional tasks when designing residential and public buildings in accordance with state building codes, taking into account sustainable development requirements, and to present and justify one's decisions.	+		+		+	+	+	+	Creative and calculation-practical assignment, modular architectural project, credit (pass/fail assessment)

[1]It should correspond to the Matrix of Program Learning Outcomes Assurance by Relevant Components of the Educational Program; it is indicated for mandatory educational components of the first and second levels of the educational program, and for all (mandatory and elective) components of the third level of the educational program.

DLO 5. Ability to make optimal structural decisions when designing buildings	+	+	+		+		+	+	Creative and calculation-practical assignment, modular architectural project, credit (pass/fail assessment)

3. CONTENT OF THE EDUCATIONAL COMPONENT (COURSE SYLLABUS)

Topic. List of questions to be covered within the topic	Time allocation within the total time budget				Recommended Literature[2]
	Contact (classroom) work Full-time			Independ-ent work	
	Lec-ture	Pract.	Lab.		
Topic 1. Pre-design analysis of the urban planning, functional-planning, and volumetric-spatial organization of a residential or public building (related to the master's thesis topic). Preparation of the research program for the scientific part of the master's thesis. - Pre-design analysis and analysis of initial data for design; - General provisions and analysis of regulatory requirements for the design of residential and public buildings; - Structure and program of research for the master's thesis; - Consideration of sustainable development principles in pre-design analysis and formation of architectural solutions (ecological efficiency, resource conservation, social responsibility).	-	8	-	8	1,2-10,11, 12-15
Topic 2. Search for the functional-planning and volumetric-spatial organization of a residential or public building related to the master's thesis topic. Work on the analytical (1st) section of the master's thesis. - Clause No. 1 on the topic: "Form-compositional solution of a residential or public building," 2 alternative options; - Clause No. 2 on the topic: "Functional-planning solution of a residential or public building," 2 alternative options; - Structure and content of the 1st analytical section of the master's thesis, considering sustainable development principles.	-	10	-	10	1,3-7, 12-14
Topic 3. Development of a sketch idea for a comprehensive architectural project of a	-	10	-	10	1,2-6,11, 12,15

[2]A specific source from the main or additionally recommended literature

residential or public building related to the master's thesis topic. Work on the theoretical-methodological (2nd) section of the master's thesis. - Search for urban planning solution of a residential or public building; - Search for volumetric-planning solution of a residential or public building; - Search for an alternative volumetric-planning solution of a residential or public building; - Structure and content of the 2nd theoretical-methodological section of the master's thesis, taking into account the sustainable development goals.					
Topic 4. Development of a comprehensive sketch of the architectural project of a residential or public building related to the master's thesis topic. Work on the final (3rd) section of the master's thesis. - Sketch of the urban planning solution of a residential or public building; - Sketch of the functional-planning solution of a residential or public building; - Sketch of the form-compositional solution of a residential or public building; - Structure and content of the 3rd final section of the master's thesis, considering sustainable development goals.	-	10	-	10	1,2-10,11, 12-14
Topic 5. Development of the final approved architectural project solution of a residential or public building related to the master's thesis topic. Formulation of the conclusions of the master's thesis. - Work on developing the final urban planning solution of the design object; - Work on developing the final functional-planning solution of the design object; - Work on developing the final volumetric-spatial and compositional solution of the design object; - Formulation of the master's thesis conclusions and their implementation in the design object.	-	10	-	10	1,2-10,11, 12
Topic 6. Development of the demonstration part of the architectural project of a residential or public building related to the master's thesis topic. Preparation of the graphic part of the scientific research results. - Arrangement of drawings according to scales; - General compositional solutions; - Coloristic solutions and search for the overall color scheme; - Conventional signs and explanations;	-	10	-	12	1,2, 5, 12-14

- Graphic design of diagrams, tables, and other graphic materials based on research results.					
Topic 7. Development of explanatory note sections for the architectural project of a residential or public building related to the master's thesis topic. - Section of urban planning solutions; - Section of volumetric-planning solutions; - Section of structural solutions; - Issues of sustainable development.	-	10	-	10	1,2-6, 12-14,15
Topic 8. Preliminary defense of the master's thesis. Review of the preliminary layout of drawings on sheets. - Preliminary defense of the scientific research of the master's thesis and its connection with the proposed design solution; - Preliminary defense and justification of the design solution of a residential or public building related to the master's thesis topic; - Analysis of the proposed layout of drawings and scientific research materials on sheets; - Organizational aspects of the master's thesis defense process.	-	6	-	6	1,2-10,11, 12, 16
Total:	**-**	**74**	**-**	**76**	

4. TEACHING AND LEARNING METHODS

DLO	**Teaching Methods** (activities conducted by the lecturer during classroom sessions and consultations)	**Number of hours**	**Learning Methods** (types of learning activities the student is expected to complete independently)	**Number of hours**
DLO 1. Ability to analyze initial data for the design of urban planning and volumetric-spatial objects, applying a comprehensive scientific approach considering the principles of sustainable development and ecological balance.	*Deductive methods* – related to the formulation of general principles, norms, and laws and their application to specific architectural tasks; presentation of material using multimedia technologies. *Practical methods* – pre-design analysis based on individual assignments. Use of MOODLE and ZOOM platforms during blended learning.	16	Working with regulatory documents, methodological guidelines, reference books, manuals, analogous projects, internet resources; completion of individual tasks related to pre-design analysis.	16

DLO 2. Ability to solve the problem of functional zoning of urban planning objects, residential and public buildings	*Functional modeling methods* – involve the differentiation of architectural objects into functional components depending on the specifics of functional processes. *Practical methods* – development of functional zoning schemes of architectural and urban planning objects and connections between individual components. Use of MOODLE and ZOOM platforms during blended learning.	16	Assimilation of theoretical material; working with methodological guidelines, textbooks, and manuals. Completion of individual tasks related to functional zoning.	16
DLO 3. Ability to develop master plans for architectural objects in accordance with the requirements of current regulations.	*Comprehensive architectural design method* – integration of theory and practice in education, combining creative exploration with functional and regulatory requirements for urban planning objects. *Practical methods* – implementation of individual architectural and urban planning tasks. Use of MOODLE and ZOOM platforms during blended learning.	16	Working with regulatory literature, reference books, and analogous projects. Completion of individual architectural and urban planning tasks.	16
DLO 4. Ability to solve functional-planning and form-compositional tasks when designing residential and public buildings in accordance with state building codes, taking into account sustainable development requirements, and to present and justify one's decisions.	*Comprehensive architectural design method* – integration of theory and practice in education, combining creative exploration with functional and regulatory requirements for architectural design. *Practical methods* – implementation of individual functional-planning and compositional tasks. Use of MOODLE and ZOOM platforms during blended learning.	16	Working with regulatory literature, reference books, and analogous projects. Completion of individual architectural and volumetric-spatial tasks.	18
DLO 5. Ability to make optimal structural decisions when designing buildings	*Comprehensive architectural design method* – involves simultaneous resolution of compositional, functional, and structural tasks in architectural design. *Practical methods* – design of structural drawings based on individual assignments. Use of MOODLE and ZOOM platforms during blended learning.	10	Use of theoretical materials, methodological guidelines, working with textbooks, manuals, and internet resources. Completion of individual practical and calculation tasks.	10

5. ASSESSMENT FOR THE EDUCATIONAL COMPONENT

5.1. Diagnostic Assessment (indicated if necessary)

5.2. Summative Assessment

5.2.1. To assess the expected learning outcomes, the following is provided:

№	Methods of Summative Assessment	Points / Weight in the Final Grade	Assessment Date
1.	Individual creative assignments after completing each topic	30 points / 30%	Upon completion of each topic
2.	Individual album of initial data and folder with sketches for the qualification master's thesis	70 points / 70%	By weeks 14–15

5.2.2. Assessment Criteria

Component	***Unsatisfactory***	***Satisfactory***	***Good***	***Excellent***
Individual creative-research tasks during the study of each topic (10 tasks – initial data sheet, 3 sets of analytical-research tables for 3 thesis sections, 4 composition clauses, 2 sketch-idea options)	<1 point	1 point	2 points	3 points
	The individual task does not correspond to the set objectives.	The individual task generally corresponds to the set objectives and is completed at a satisfactory level.	The individual task corresponds to the set objectives, completed at a fairly high level with minor errors.	The individual task fully meets the objectives and is completed at a high level.
Individual album of initial data and folder with sketches for the thesis project	<35 points	35–50 points	50–65 points	65–70 points
	The album and folder do not meet the assignment requirements; drawings are schematic.	The album and folder meet the assignment but contain significant errors; completed at a satisfactory level.	The album and folder are completed at a fairly high level with minor errors.	The album and folder are completed at a high level, meeting all requirements.

5.3. Formative Assessment:

To evaluate the current progress in learning and to understand areas for further improvement, the following is provided:

№	**Elements of Formative Assessment**	**Date**
1.	Oral feedback from the instructor during work on the individual assignment	Each practical session
2.	Oral feedback during the preparation of the individual album of initial data and folder with sketches for the qualification thesis	Weekly

Self-assessment can be used as an element of both summative and formative assessment.

6. LEARNING RESOURCES (LITERATURE))

6.1. Main Sources

1. Korol, Volodymyr. Architectural Design of Housing. Textbook. Kyiv: Samit-Knyha, 2023. 314 pages.
2. Boyko, H. S. Types of Buildings and Architectural Structures. Educational manual. Lviv, 2021. 224 pages.
3. Boroday, S.P., Boroday, A.S., Boroday, D.S., Boroday, Ya.O., Masliy, I.V., Dranyk, O.I. Typology and Engineering Equipment of Residential and Industrial Buildings and Structures. Educational manual. Sumy: SNAU, 2022. 308 pages, illustrated.
4. Green Buildings for Sustainable Residential Construction. Monograph. Dnipro, 2018. 100 pages.
5. Kovalskyi, L.M., Lyakh, V.M., Dmytrenko, A.Yu., et al. Typology of Public Buildings and Structures. Educational manual for university students. Poltava: PoltNTU, 2011. 225 pages, illustrated.
6. Kryzhanovska, N.Ya., Smirnova, O.V. Lecture Notes on the Discipline “Architecture of Residential Buildings” (for Master’s level students in Architecture and Urban Planning). Kharkiv: KhNUMG named after O.M. Beketov, 2017. 104 pages.
7. Linda, S.M., Morklyanyk, O.I. Typology of Public Buildings and Structures. Textbook. Lviv: Lviv Polytechnic Publishing House, 2015. 348 pages.
8. Lyakh, V.M., Boroday, A.S., Boroday, D.S. Typology of Residential and Industrial Buildings and Structures. Educational manual. Edited by V.M. Lyakh. Poltava: PoltNTU, 2015. 269 pages, illustrated.
9. Maikova, S., et al. Design and Planning of Hotel and Restaurant Facilities. Textbook. Kyiv: Karavela, 2023. 336 pages.

6.1.1. Other Sources

10. DBN B 2.2-12:2019. Planning and Development of Territories.
11. DBN B 2.2-15:2019. Buildings and Structures. Residential Buildings. Basic Provisions.
12. DBN V.2.2-9-2018. Buildings and Structures. Public Buildings and Structures. Basic Provisions.
13. Vysochyn, I.A., Andrukh, S.L., Borodai, S.P., Borodai, A.S., Borodai, D.S., Halushka, S.A. The Problem of Spatial Existence of a Megapolis Resident. Scientific Bulletin of Construction. Kharkiv, KNUBA No. 3, 2020, pp. 62-71.
14. Borodai, D.S., Borodai, A.S., Borodai, S.P., Borodai, Ya.O. Architectural and Planning Trends in the Formation of Recreational Complexes in Suburban Areas: The Example of Sumy Region. Urban Planning and Territorial Planning: Scientific and Technical Collection / Chief Editor M.M. Dyomin. Kyiv, KNUCA, 2021, Issue 76, pp. 28-36.
15. Borodai, S.P., Borodai, A.S., Borodai, D.S., Borodai, Ya.O. Ecological Construction Technologies in Modern Folk Architecture of Northeastern Ukraine. Urban Planning and Territorial Planning: Scientific and Technical Collection / Chief Editor M.M. Dyomin. Kyiv, KNUCA, 2021, Issue 77, pp. 43-56.
16. Borodai, S.P., Vysochyn, I.A., Borodai, D.S., Cherednychenko, O.M., Borodai, A.S., Borodai, Ya.O. Reconstruction of National Architectural Monuments into Social Protection Facilities: The Example of the Lishchynskyi Palace in Sumy Region. Scientific Bulletin of Construction. Kharkiv, KNUCA, Vol. 106, No. 4, 2021, pp. 30-38.