

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

**O. M. BEKETOV NATIONAL UNIVERSITY
of URBAN ECONOMY in KHARKIV**

METHODOLOGICAL RECOMENDATIONS
for the organization of independent work
and conducting practical classes
in the subject

“3D-COMPUTER MODELING”

*(for applicants of the first (bachelor) level of higher education
full-time study in specialty 191 – Architecture and urban planning)*



**Kharkiv
O. M. Beketov NUUE
2024**

Methodical recommendations for the organization of independent work and conducting practical classes in the subject “3D-computer modeling” (for applicants of the first (bachelor) level of higher education full-time study in specialty 191 – Architecture and urban planning) / O. M. Beketov National University of Urban Economy in Kharkiv ; comp. : N. O. Malik, A. I. Nos, Y. S. Veligotska. – Kharkiv : O. M. Beketov NUUE, 2024. – 34 p.

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*Recommended by the department of Architecture of Buildings and Structures,
protocol № 1 from 28 of August, 2023*

Methodological recommendations are intended for applicants in specialty 191 – Architecture and urban planning. Design requirements have been submitted, means and sequence of task performance, list of recommended sources; examples of work design are given.

CONTENTS

INTRODUCTION	4
1 GENERAL CONDITIONS	5
2 ORGANIZATIONAL AND METHODOLOGICAL GUIDELINES	6
3 TOPICS OF PRACTICAL WORKS	6
4 STRUCTURE OF THE EDUCATIONAL PROCESS AND RECOMMENDATIONS FOR PRACTICAL AND INDEPENDENT WORK DURING STUDYING THE CONTENT MODULE 1 “3D COMPUTER MODELING”	7
5 MEANS OF CONTROL AND STRUCTURE OF EVALUATION CREDIT	11
SUPPLEMENT A	13
SUPPLEMENT B	18

INTRODUCTION

The discipline “3D computer modeling” is one of the main components of the disciplines of the cycle of professional training of architectural students at the “bachelor” level, which is studied for eight semesters.

In the methodical recommendations, the organizational and educational-methodical issues, which arise in the process of conducting practical and independent work during the study of the discipline “3D computer modeling” are briefly described. In particular, the basics of computer modeling using AutoDesk software – 3D’s MAX were considered. The materials are presented taking into account the norms of time allocation for practical and independent work of students in accordance with the work program of the academic discipline.

The purpose and task of studying the discipline – to form students’ skills in using computer technology in architectural design, to reveal the basic principles of using 3D programs in professional activity for designing interiors and exteriors of the architectural environment.

The subject of studying the discipline is:

- 1) methods of graphic design of projects, methods and basics of designing space design;
- 2) creation within the design project of unique of complexity elements, unavailable for designing with the help of conventional tools;
- 3) architectural and design modeling of interior space.

Content module 1 consists of practical works (30 hours), where students receive relevant theoretical information while performing a number of tasks, provided by the work program of the discipline. The purpose of independent work (60 hours) is to master independent thinking by mastering the method of solving tasks defined by the teacher during practical work. Issues that are considered in the course of auditorium classes are worked out by students independently with the help of recommended literary sources.

1 GENERAL CONDITIONS

Quantitative and thematic distribution of time for practical and independent work is determined by the information structure of the content module 1 “3D computer modeling” – 3 credits / 90 hours.

Table 1.1 – Quantitative and thematic distribution of time

Theme 1 Computer design of architectural spaces using 3D modeling software	
Familiarization with the software and training in basic skills. Selection of project solutions. Work with auxiliary components. Carrying out work on the creation of components of the main volume.	1/30 credits/hours
Theme 2 Detailing: texture, entourage, light and shadow	
The methods of layout out texture maps are considered and analyzed. Materials and texture maps are being prepared and adjusted. The analysis of placement and adjustment of main and additional light sources, their adjustment, ergonomic arrangement of furniture in the interior and their modeling is carried out.	1/30 credits/hours
Theme 3 Render setting and visualization in 3ds Max	
Possible shortcomings and problems in the work and their correction are considered. Basic settings and adjustments of rendering systems are analyzed. Rendering systems with a ready-made scene are studied and adjusted. Layout and preparation for printing	1/30 credits/hours

The organization of practical and independent work should create conditions for students to gradual acquire knowledge, skills, techniques and methods of developing project documentation with the use of the AutoDesk software.

The task of practical and independent works within content module 1 "3D computer modeling" is students' gradual acquire of knowledge, skills, techniques and methods of project development both under the guidance of a teacher and independently (within the conducting of practical work).

2 ORGANIZATIONAL AND METHODOLOGICAL GUIDELINES

Methods of studying the content module 1 “3D computer modeling” involves a combination of auditorium practical classes (30 hours) and independent work (60 hours).

The work program of the course “Architectural modeling” of content module 1 “3D computer modeling” provides for the performance of seven practical works.

3 TOPICS OF PRACTICAL WORKS

Practical work № 1. Preparation and customization of the software for work; Gradual and thorough acquaintance with the program interface.

Practical work № 2. Detailed analysis and selection of references of various style of the planning structure of an apartment or an individual residential building; Uploading the selected plan and further preparation for work, creating a 3D volume and writing a report about the chosen style.

Practical work № 3. Learning techniques for building the overall volume of the scene: walls, door and window openings in them, uploading and creating models of doors and windows. Learning techniques for building the overall volume of the scene: walls and door and window openings in them, downloading the creation of models of doors and windows.

Practical work № 4. Studying additional plugins and modifiers. Carrying out work on the creation of components of the main volume: floor, plinths, modeling of the ceiling with cornices and light sources.

Modular control № 1. Defending of graphic works according to the list of tasks (graphic and verbal control).

Practical work № 5. Analysis of the filling of the furniture set, texture maps and lighting of the selected reference. Acquaintance with free access sources with loading of auxiliary materials. Working out the creation and setting of the scene.

Practical work № 6. Creation of furniture filling with the help of plugins and modifiers and uploading to the scene of furniture from the archive and decor. Development of setting and methods of laying out texture maps on created objects with material override off. Processing of all possible lighting sources with the study of their properties and settings.

Modular control № 2. Defending of graphic works according to the list of tasks (graphic and verbal control).

Practical work № 7 A thorough study of the features and setting of cameras in the interior as a component of rendering. Performing of installation, setup and adjustment of the camera (setting of 2–3 angles of reference) with perspective

correction, vertical alignment, and zooming or lens cropping, by setting the rendering system of the software; draft and final rendering of the graphic part.

Modular control № 3. Defending of graphic works according to the list of tasks (graphic and verbal control).

Final semester control – differentiated test. Defending of a general album of graphic works in A3 format, assessment of the working file of the *.max* format with a scene in which the entire process of modeling and setting texture and light maps took place, necessarily in a *.rar/.zip* archive with a folder of textures, theoretical questions about work (verbal control).

Samples of graphic performance of practical works are given in the end of these methodological guidelines.

For a better understanding by students of the structure of the educational process and the combination of separate elements of independent work with auditorium classes this section is presented in the form of structural and table of contents, which include both information about the content, structure and time allocation for individual topics of practical work, and recommendations for independent tasks.

4 STRUCTURE OF THE EDUCATIONAL PROCESS AND RECOMMENDATIONS FOR PRACTICAL AND INDEPENDENT WORK DURING STUDYING THE CONTENT MODULE 1 “3D COMPUTER MODELING”

Table 4.1 – Structure of the educational process and recommendations for practical and independent work

Types of the tasks	Hours	Theme and content of the work
1	2	3
Module 1 3D computer modeling		
Content module 1 Computer design of architectural spaces using 3D modeling software		
Theme 1 Introduction to the course and acquaintance with the software of the AutoDesk company. Analysis of analogues and preparation for work with a practical task		
1.1 Familiarization with software and learning basic skills		

Continuation of Table 4.1

1	2	3
Practical task № 1	2	Preparation and customization of the software for work; Gradual and thorough acquaintance with the program interface
Independent work	5	– preparation and setting up the software for work; – acquaintance with the program interface; – saving of the workspace
1.2 Selection of project solutions		
Practical task № 2	4	Detailed analysis and selection of project solutions of the planning structure of an apartment or an individual residential building; Downloading the selected plan and further preparation for work, creating a 3D-volume and writing a report about the chosen style
Independent work	2	Analysis and selection of individual project solutions of the planning structure of an apartment or an individual residential building. Downloading the selected plan and further preparation for work, creating a 3D volume
Independent work	3	Adding a plan to the program and learning techniques for building the overall volume of the scene: walls, door and window openings in them, uploading and creating models of doors and windows
1.3 Work with auxiliary components		
Practical task № 3	4	Studying additional plugins and modifiers. Carrying out work on the creation of components of the main volume: floor, plinths, modeling of the ceiling with cornices and light sources
Independent work	5	– work with additional plugins and modifiers; – creation of floors and plinths; – modeling of the ceiling with cornices and installation of light sources; – selection of furniture filling
Content module 2 Detailing: texture, entourage, light and shadow		
Theme 2 Designing individual interior space. Light and texture setting for rendering		
2.1 The analysis of interior design styles		

Continuation of Table 4.1

1	2	3
Practical task № 4	5	Analysis of different styles of interior design, selection of individual style of each student. Study of the ergonomic arrangement of furniture in the interior space. Acquaintance with free access sources with loading of auxiliary materials. Working out the creation and setting of the scene
Independent work	5	– study of the ergonomic arrangement of furniture in the interior space; – writing a report with an analysis of the chosen style
2.2 Design of interior space		
Practical task № 5	5	Analysis of the filling of furniture set, texture maps and lighting of the selected reference. Acquaintance with free access sources with loading of auxiliary materials. Working out the creation and setting of the scene
Independent work	5	– loading furniture models according to the reference; – loading and analyzing texture maps; – loading light sources
Practical task № 6	5	Creation of furniture filling with the help of plugins and modifiers and uploading to the scene of furniture from the archive and decor. Development of setting and methods of laying out texture maps on created objects with material override off. Processing of all possible lighting sources with the study of their properties and settings
Independent work	5	– downloading models of furniture and decorative elements; – creation of furniture and decorative elements
Independent work	5	– application of various textures on modeling objects; – installation and setting of main and additional light sources; – familiarization with texture maps and their setting

End of Table 4.1

1	2	3
Content module 3 Render setting and visualization in 3ds Max		
Theme 3 Setting up rendering systems. Completion of drawings and graphic exercises for printing		
Practical task № 7	10	A thorough study of the features and setting of cameras in the interior as a component of rendering. Performing of installation, setup and adjustment of the camera (setting of 2–3 angles of reference) with perspective correction, vertical alignment, and zooming or lens cropping, by setting the rendering system of the software; draft and final rendering of the graphic part.
Independent work	5	Performing of installation, setup and adjustment of the camera (setting of 2–3 angles of reference) with perspective correction, vertical alignment, and zooming or lens cropping
Independent work	5	Development and familiarization with the setting of the rendering system of the software, performing of draft and final rendering of the graphic part

According to the content module 1, the following forms of current control of knowledge are provided:

- 1) performance of graphic exercises – practical works independently and in auditorium;
- 2) defending of the general album of graphic works in A3 format (graphic and verbal control);
- 3) assessment of the working file of the .max format with a scene in which the entire process of modeling and setting texture and light maps took place, necessarily in a .rar/.zip archive with a folder of textures;
- 4) theoretical questions about work (verbal control).

5 MEANS OF CONTROL AND STRUCTURE OF EVALUATION CREDIT

Table 5.1 – Types and means of control

Types and means of control (testing, control works, individual tasks)	Distribution of points, %
1	2
Current control of the content module 1 in V semester	
Theme 1 Introduction to the course and acquaintance with the software of the AutoDesk company. Analysis of analogues and preparation for work with a practical task. Practical works	10 % 15 %
Theme 2 Designing individual interior space. Light and texture setting for rendering. Practical works	10 % 15 %
Theme 3 Setting up rendering systems. Completion of drawings and graphic exercises for printing. Practical works	10 % 10 %
Final control of the content module 1 – Dif. test Defending of the general album of graphic works in A3 format (graphic and verbal control). Assessment of the working file of the .max format with a scene in which the entire process of modeling and setting texture and light maps took place, necessarily in a .rar/.zip archive with a folder of textures. Theoretical questions about work (verbal control)	10 % 10 % 10 %
TOTAL FOR THE MODULE	100 %

LIST OF USED AND RECOMMENDED SOURCES

1. Melnyk, O. S. Computer animation and 3D modeling [Electronic resource] : training manual / O. S. Melnyk ; Uman. P. Tychyny State Pedagogical University. – Electronic text data. – Uman : P. Tychyny SPU in Uman, 2018. Retrieved from: <https://dspace.udpu.edu.ua/bitstream/6789/9998/1/kompanim.pdf>, free (date of the application 25.08.2023). – Title from the screen.

2. Boyko A. P. Computer design in the 3Ds MAX environment [Electronic resource] : training manual / A. P. Boyko, O. V. Dvornyk ; Mykolayiv. P. Mohyly national university. – Electronic text data. – Mykolayiv : P. Mohyly BSNU, 2020. – 140 p. – Retrieved from: <https://dspace.chmnu.edu.ua/jspui/bitstream/123456789/380/1/Бойко%20А.%20П.%20Комп%27ютерне%20проектування%20в%20середовищі.pdf>, free (date of the application 28.06.2023). – Title from the screen.

3. Kovalyov Y. M. Basics of three-dimensional computer modeling [Electronic resource] : edu.-method. compl. for disc. "Basics of three-dimensional computer modeling,, / Y. M. Kovalyov, V. V. Kalinichenko ; Kyiv. national avia university – Electronic text data. – Kyiv : NAU, 2020. – 140 p. – Retrieved from: <https://er.nau.edu.ua/handle/NAU/33695>, free (date of the application 14.08.2023). – Title from the screen.

4. Kovrov A. V. A collection of student scientific papers [Electronic resource] : scientific work / A. B. Ковров ; Odesa. gov. acad. civ. eng. and arch. – Electronic text data. – Odesa : OGASA, 2019. – 297 p. – Retrieved from: https://odaba.edu.ua/upload/files/Studentskiy_zbirnik_2018-19_1.pdf, free (date of the application 28.08.2023). – Title from the screen.

5. Abbasov B. Fundamentals of 3D modeling in the graphics system 3ds Max. Training Manual [Electronic resource] / Abbasov B. // Tiansi Dong. – Electronic text data. – 2017. – Vol. 7, no. 2. – Retrieved from: https://www.researchgate.net/publication/330213010_Fundamentals_of_3D_modeling_in_the_graphics_system_3ds_Max_Training_Manual_141p, free (date of the application : 22.06.2023). – Title from the screen.

6. Electronic resource Autodesk 3D`s Max 2021 [Electronic resource]. – Electronic text data. – Retrieved from: <https://knowledge.autodesk.com/ru/support/3ds-max?sort=score>, free (date of the application : 14.08.2023). – Title from the screen.

7. DSTU B A.2.4-8:2009. Conventional graphic images and marks. – Valid from 2010–01–01. – Kyiv : Minregion of Ukraine, 2010. – 15 p.

8. DSTU B A.2.4-4-2009. Basic requirements for design and work documentation. – Valid from 2010–01–01. – Kyiv : Minregion of Ukraine, 2010. – 15 p.

SUPPLEMENT A

Application setting and hotkeys

Practical work № 1 Setting of the interface and “Working environment”

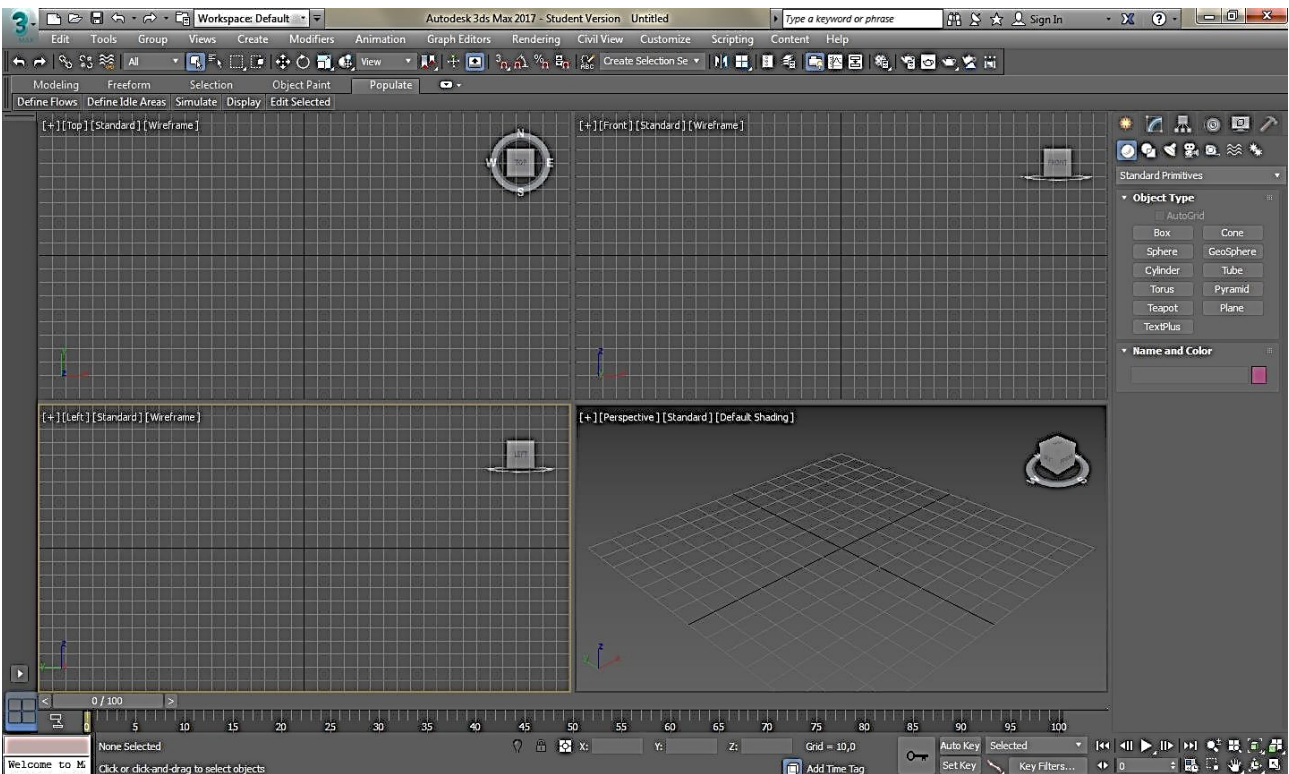
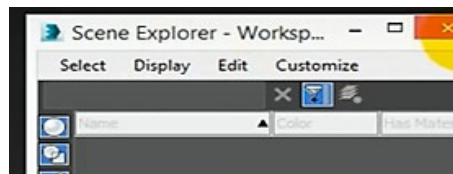
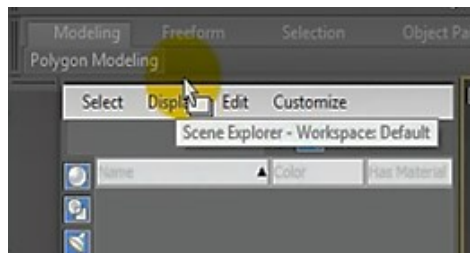
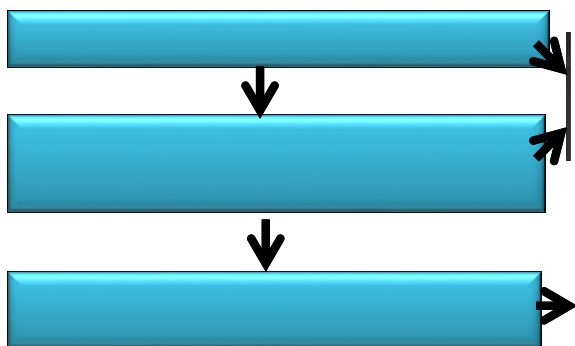


Figure A.1 – General appearance of the 3D’s MAX interface by default

1. Setting the color of the interface of the work environment:

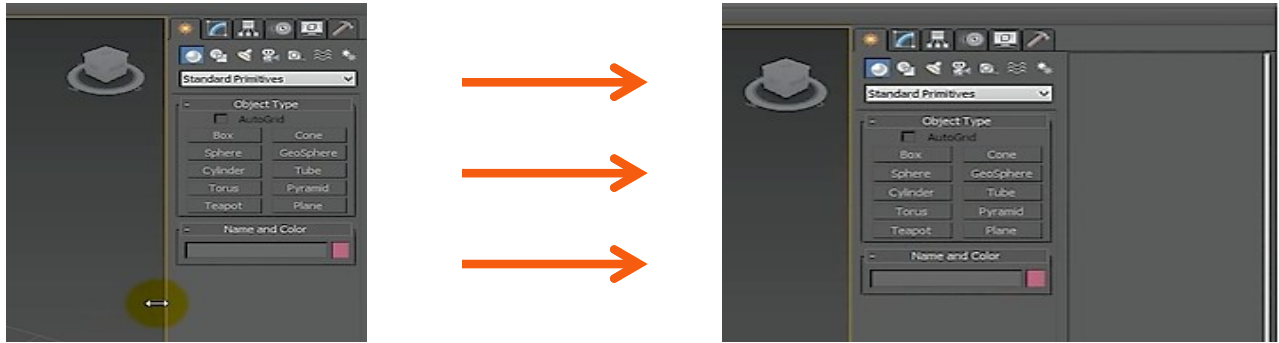


2. Hiding of extra windows:



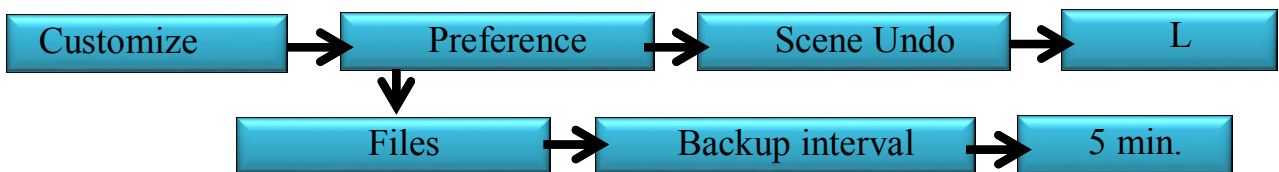
We also perform this action with the ”Viewport,, panel and ”Layout Tabs”

3. Expand the control panel into two columns:

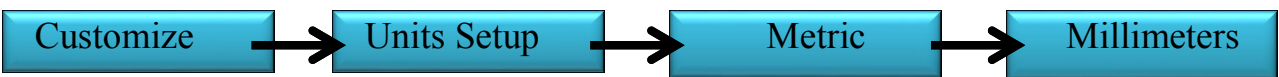


In the process of work, it allows you not to scroll a lot (more information in front of your

4. Setting the number of times to cancel and save “Backup” files



5. Changing of measurement units:



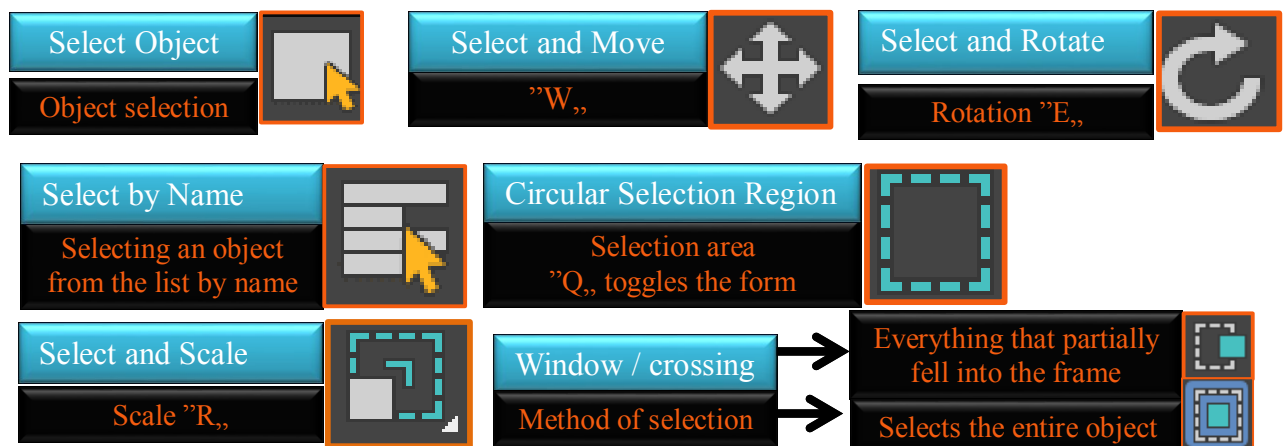
6. Turning off the “Greetings” window (optional):



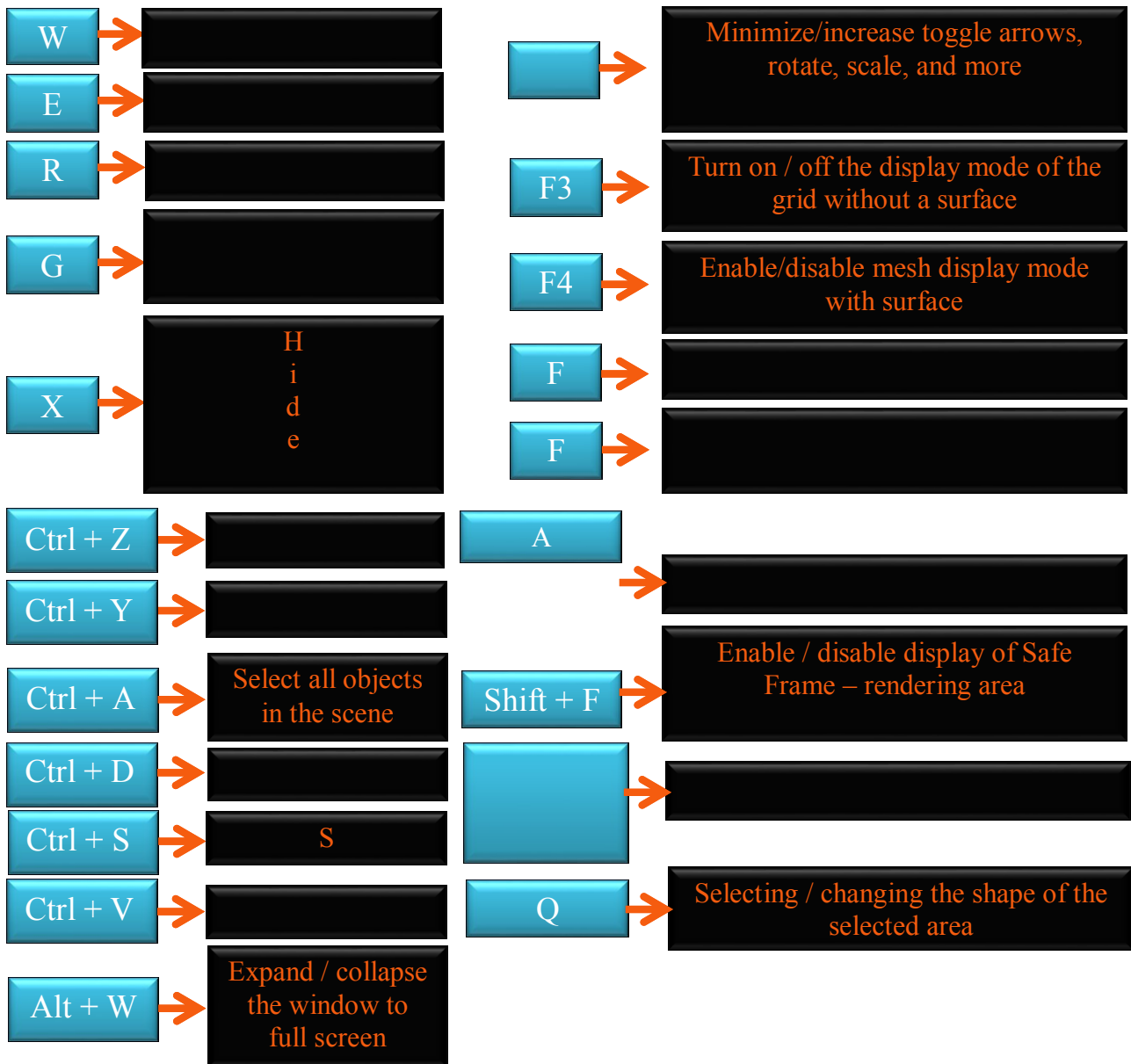
7. Replacing/viewing/assigning of hotkeys by going to the menu:



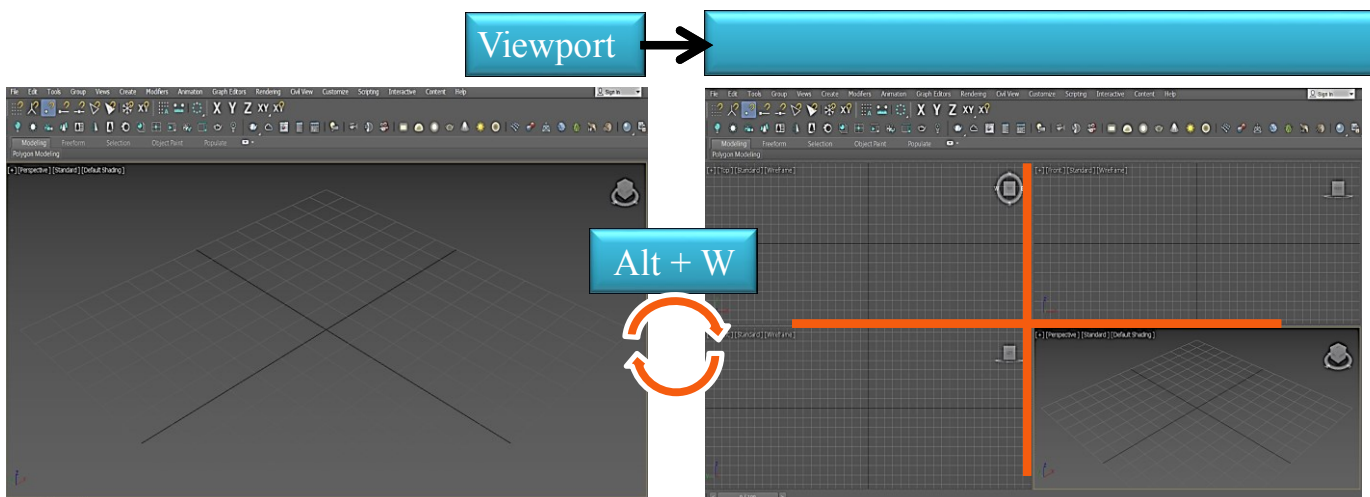
8. Toolbar



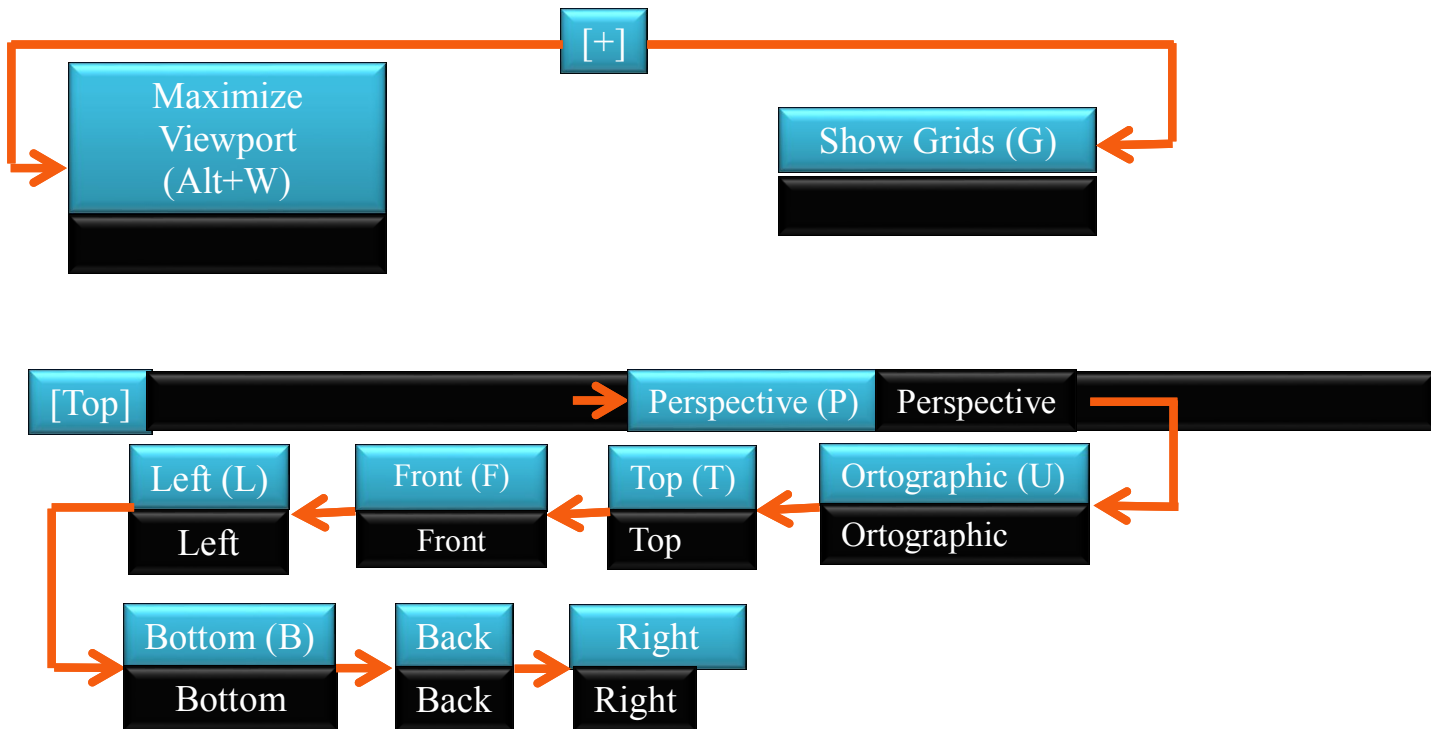
8. Interface hotkeys



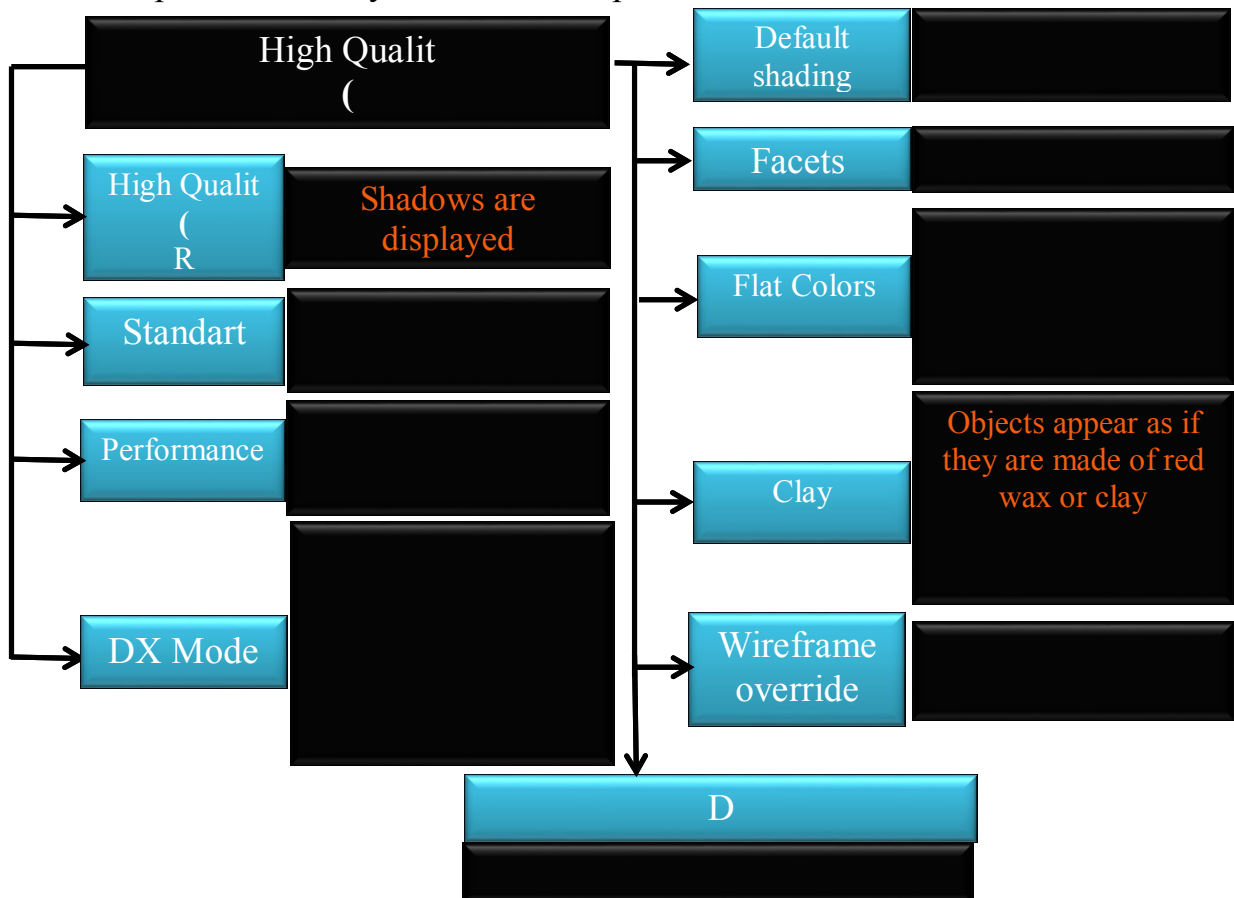
9. Switching projection windows



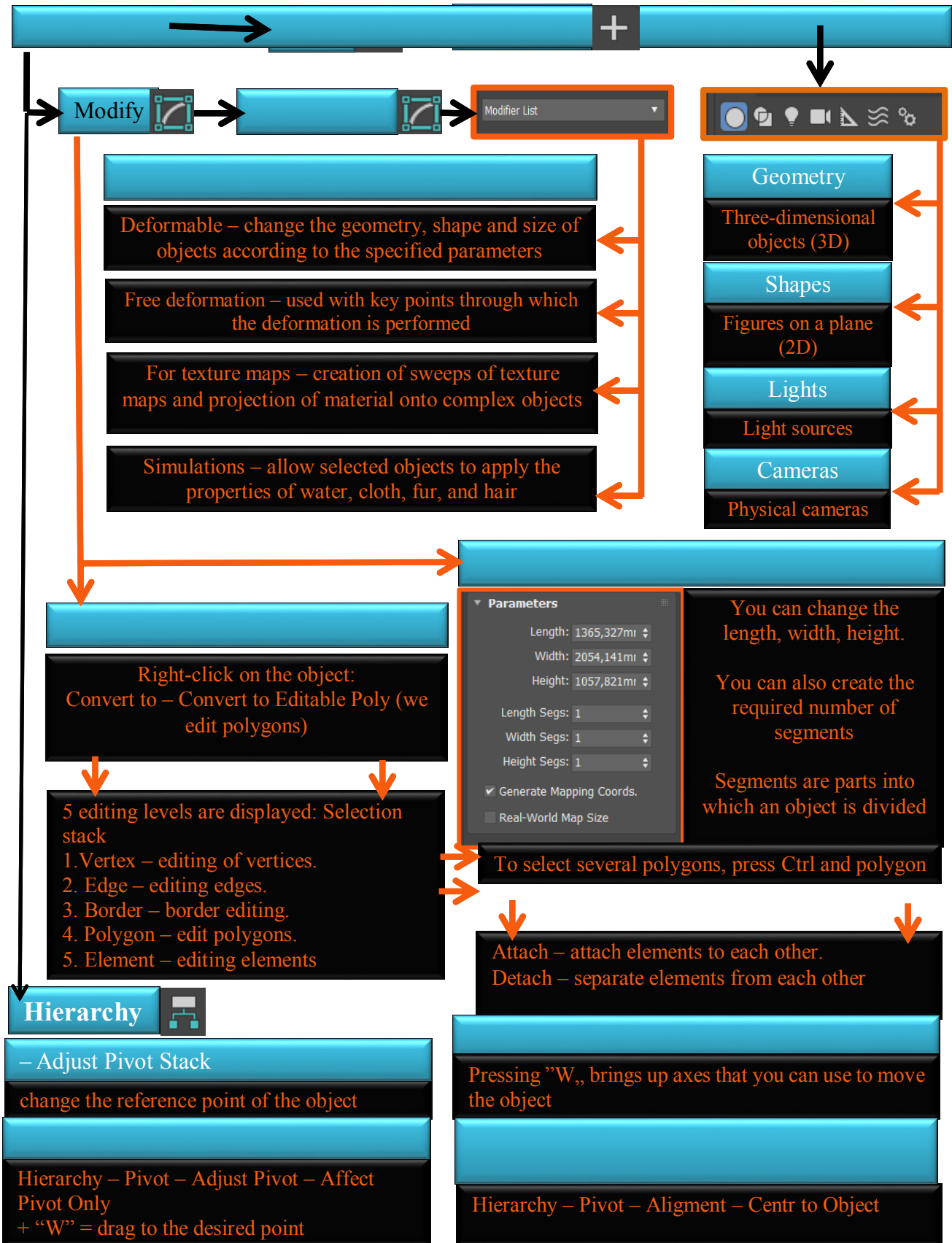
10. Explanation of icons in the Viewport



11. Explanation of styles in the Viewport



12. Explanation of the control panel



SUPPLEMENT B

An example of a graphic album

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
O.M. BEKETOV NATIONAL UNIVERSITY OF URBAN ECONOMY
IN KHARKIV

DEPARTMENT OF ARCHITECTURE
OF BUILDINGS AND STRUCTURES

ALBUM

OF GRAPHIC WORKS

WORK FROM THE DISCIPLINE

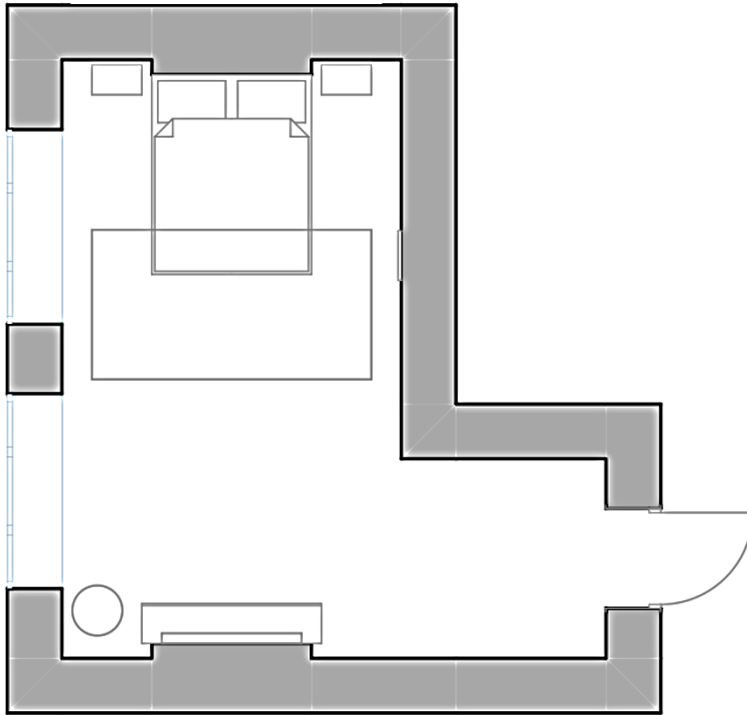
“3D COMPUTER MODELING”

Completed by: st. gr. A 2021-1
Zacharenko O.V.
Checked by:
lect. dep.ABS
assist. Malik N.O.
assist. Nos. A.I.

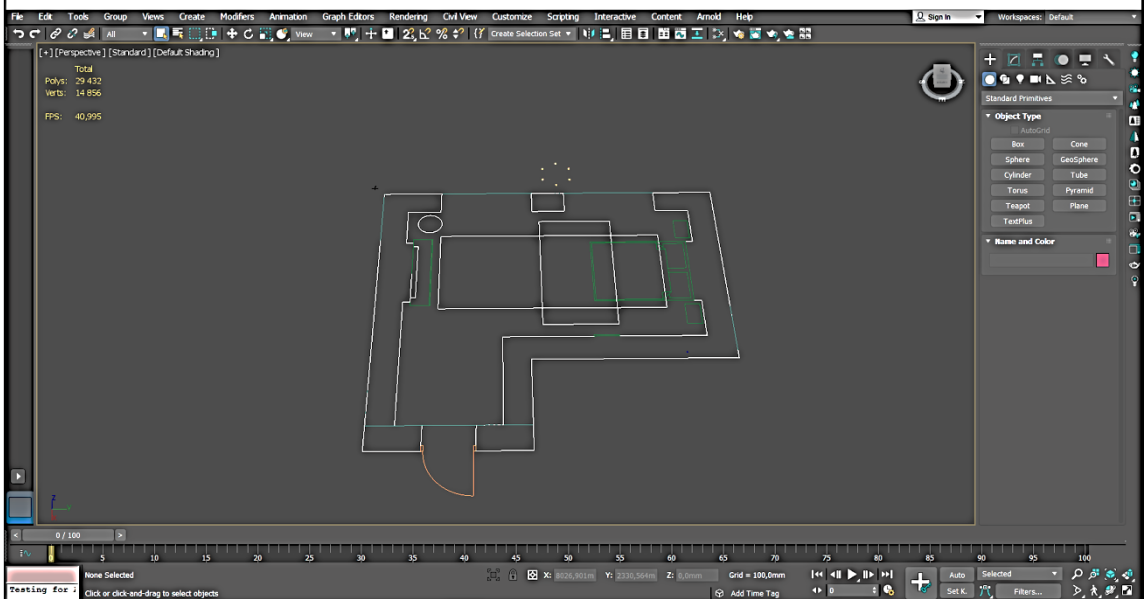
KHARKIV - 2023

Figure B.1 – Title sheet (A3 format)

Content Module 1. Computer design of architectural spaces using 3D modeling software
 Task 1.1. Plan S 1:50



Task 1.2. The plan in .dwg format uploaded into the program

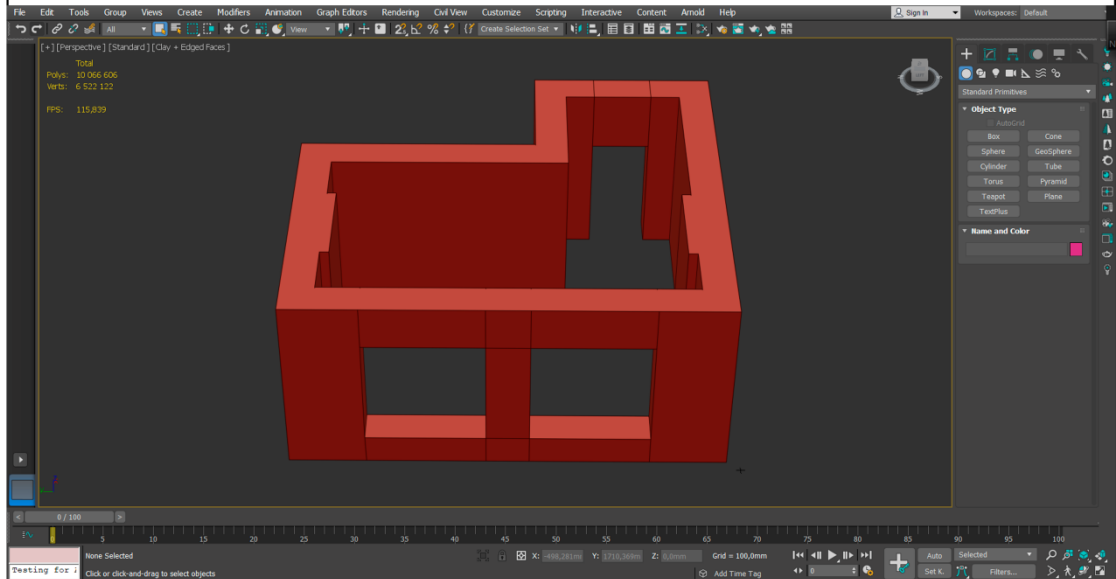


						Topic 1. Introduction to the course and acquaintance with Autodesk Software. Analysis of analogues and preparation for work with a practical task.			
Mod.	Num.	Sheet	Nfdoc	Signature	Date	3D - computer modeling	Stage	Sheet	Sheets
Checked by		Malik N. O.					MD	1	12
Checked by		Nos A. I.							
Drawn by		Zakharenko O.V.				Preparation for work	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

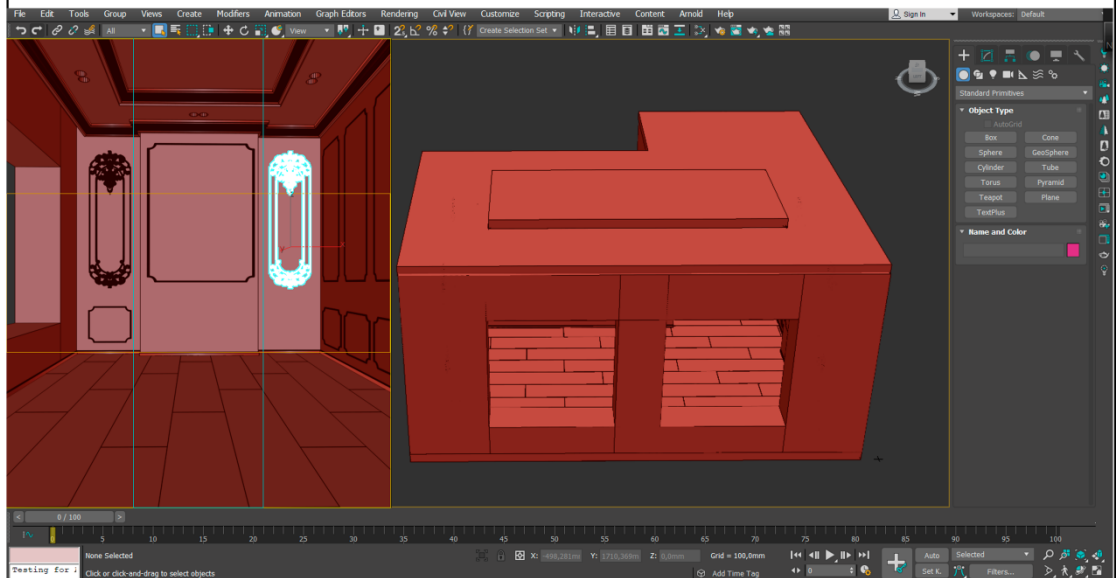
Figure B.2 – Preparation for work (A3 format)

Content Module 1. Computer design of architectural spaces using 3D modeling software

Task 1.3. Modeling walls with holes in the scene



Task 1.4. Modeling the ceiling with cornices and the floor with plinths in the scene

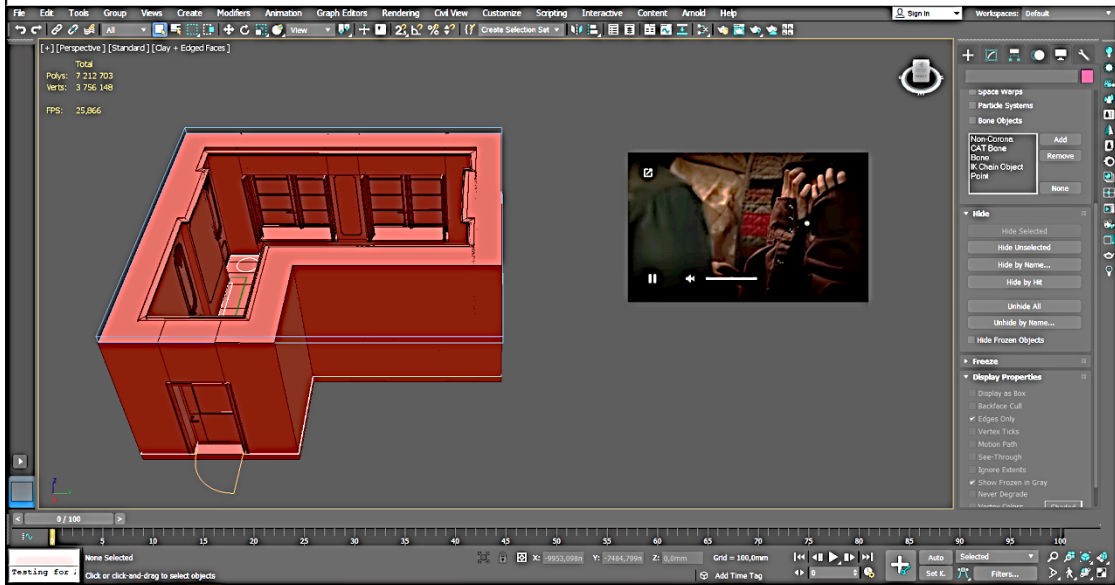


Mod.	Num.	Sheet	Nfdoc	Signature	Date	Topic 1. Introduction to the course and acquaintance with Autodesk Software. Analysis of analogues and preparation for work with a practical task.			
Checked by	Malik N. O.					3D - computer modeling	Stage	Sheet	Sheets
Checked by	Nos A. I.						MD	2	12
Drawn by	Zakharenko O.V.					Modeling the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

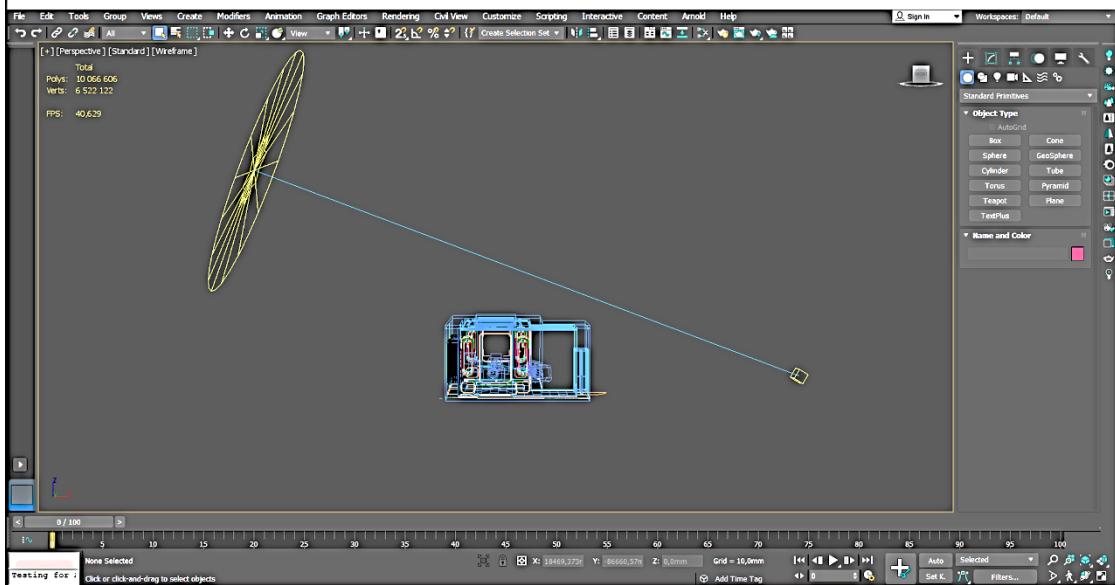
Figure B.3 – Modeling of the scene (A3 format)

Content Module 1. Computer design of architectural spaces using 3D modeling software

Task 1.5. Modeling and creation of windows and doors in the scene



Task 1.4. Initial installation of the sun and cameras in the scene



Mod.	Numb.	Sheet	Nfdoc	Signature	Date	Topic 1. Introduction to the course and acquaintance with Autodesk Software. Analysis of analogues and preparation for work with a practical task.			
						3D - computer modeling	Stage	Sheet	Sheets
							MD	3	12
						Modeling the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.4 – Modeling of the scene (A3 format)

Stamp for sheet 1

						Topic 1. Introduction to the course and acquaintance with AutoDesk Software. Analysis of analogues and preparation for work with a practical task.					
Mod.	Num.	Sheet	N°doc.	Signature	Date				Stage	Sheet	Sheets
Checked by	Malik N. O.					3D - computer modeling			MD	1	12
Checked by	Nos A. I.										
Drawn by	Zakharenko O.V.					Preparation for work			Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.5 – Example of the stamp, sheet 1

Stamp for sheet 2

						Topic 1. Introduction to the course and acquaintance with AutoDesk Software. Analysis of analogues and preparation for work with a practical task.					
Mod.	Num.	Sheet	N°doc.	Signature	Date				Stage	Sheet	Sheets
Checked by	Malik N. O.					3D - computer modeling			MD	2	12
Checked by	Nos A. I.										
Drawn by	Zakharenko O.V.					Modeling the scene			Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.6 – Example of the stamp, sheet 2

Stamp for sheet 3

						Topic 1. Introduction to the course and acquaintance with AutoDesk Software. Analysis of analogues and preparation for work with a practical task.					
Mod.	Num.	Sheet	N°doc.	Signature	Date				Stage	Sheet	Sheets
Checked by	Malik N. O.					3D - computer modeling			MD	3	12
Checked by	Nos A. I.										
Drawn by	Zakharenko O.V.					Modeling the scene			Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.7 – Example of the stamp, sheet 3

Content Module 2. Detailing: texture, entourage, light and shadow.

Task 2.1. Furniture modeling using the independent method

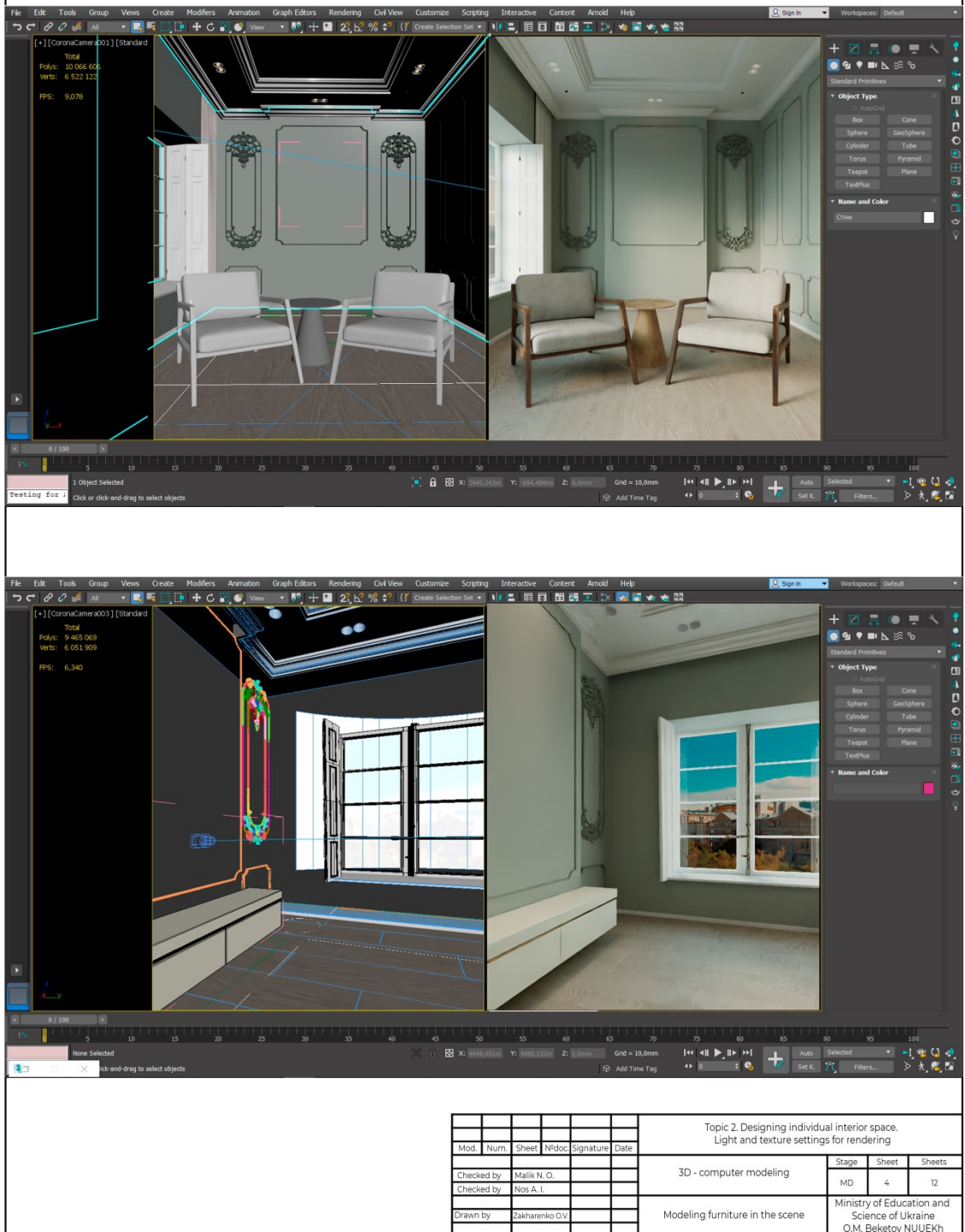


Figure B.8 – Modeling of the furniture in the scene (A3 format)

Content Module 2. Detailing: texture, entourage, light and shadow.

Task 2.2 Furniture modeling using the method of loading into the scene

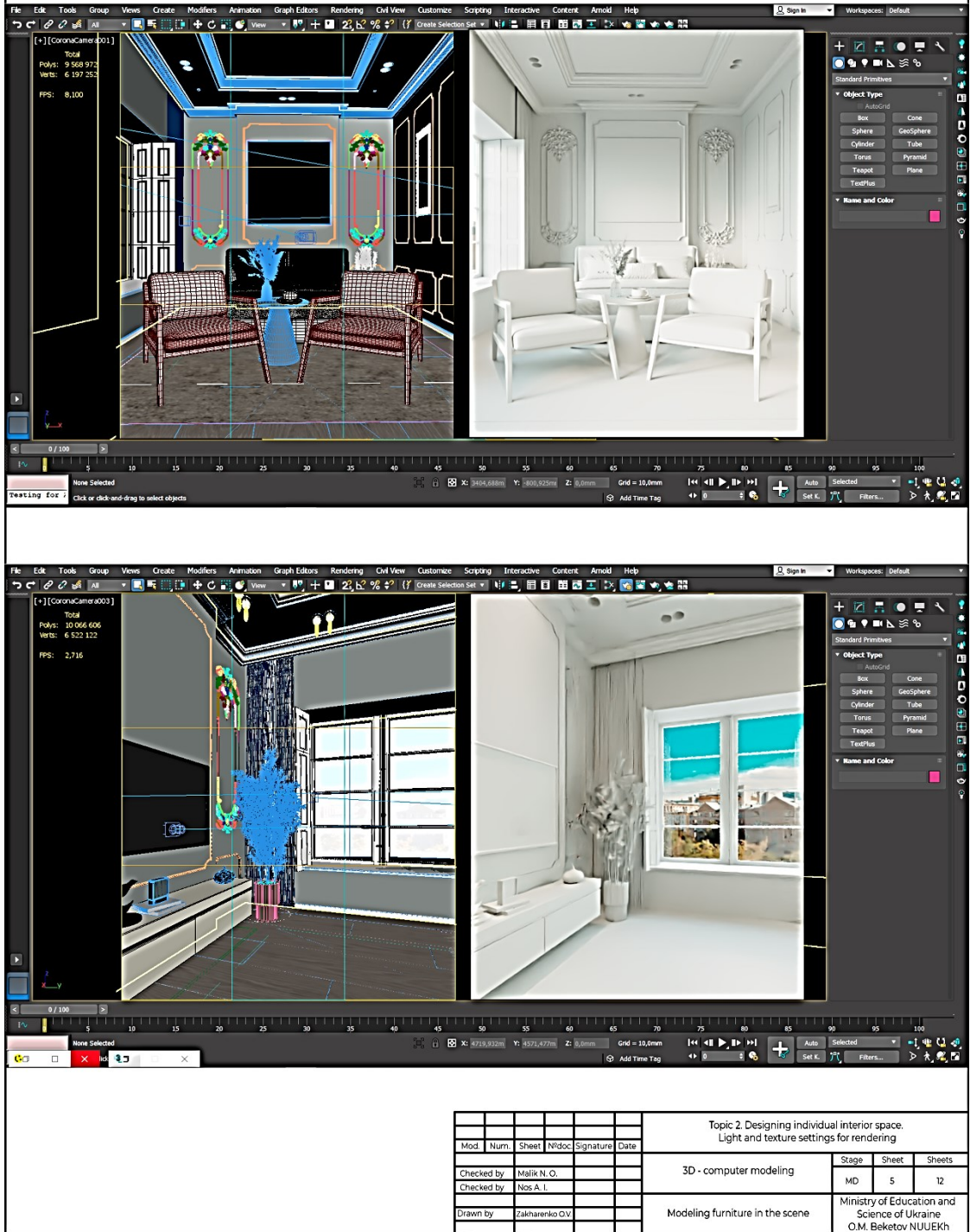
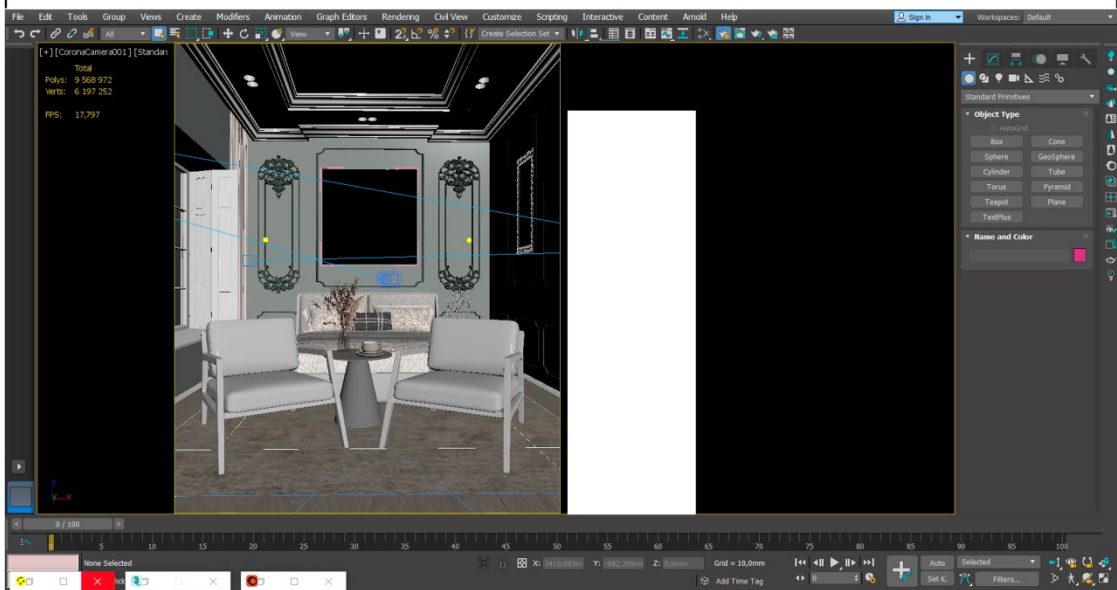
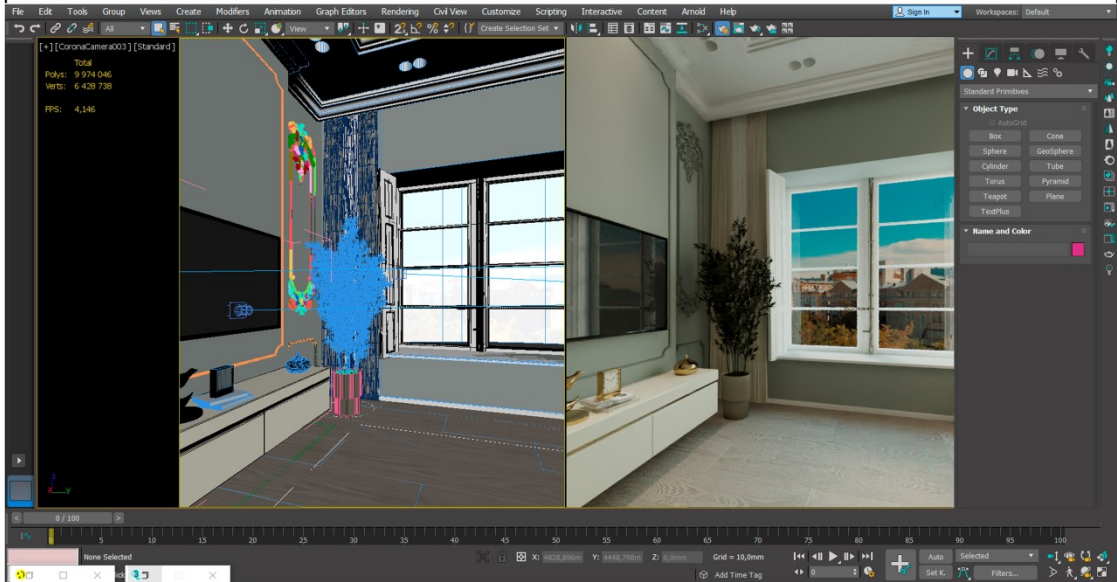


Figure B.9 – Uploading of the furniture into the scene (A3 format)

Content Module 2. Detailing: texture, entourage, light and shadow.

Task 2.3 Texturing of objects in the scene

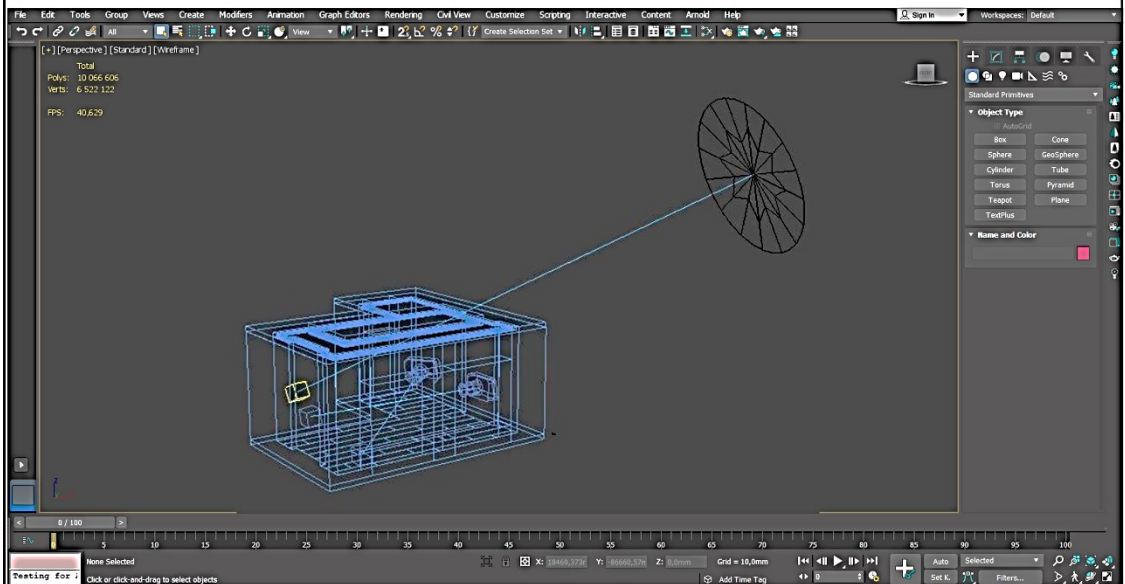
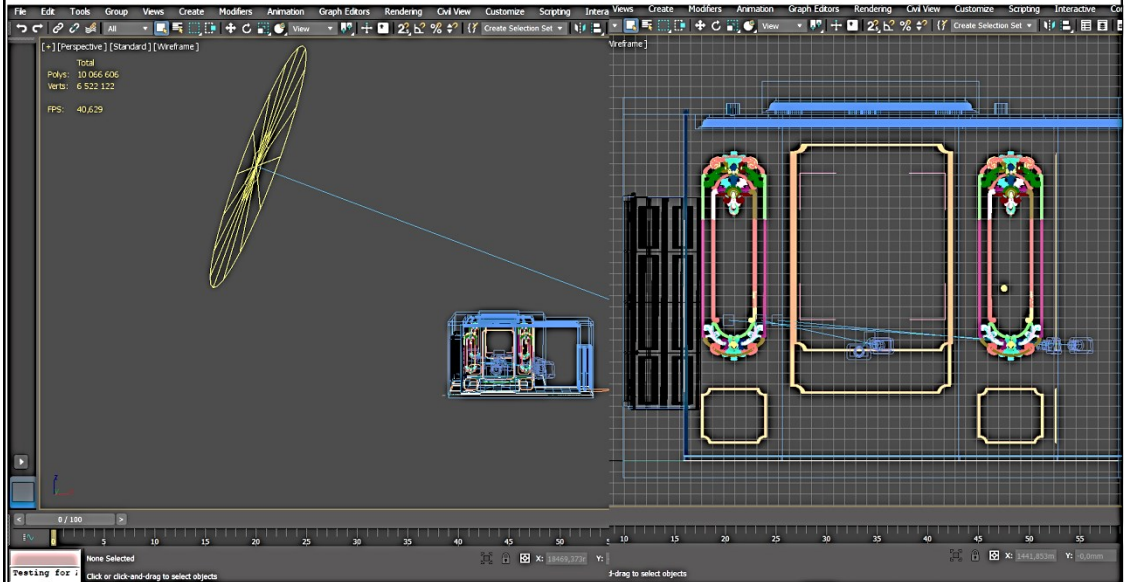


Mod.	Num.	Sheet	NrDoc	Signature	Date	Topic 2. Designing individual interior space. Light and texture settings for rendering			
Checked by	Malik N. O.					3D - computer modeling	Stage	Sheet	Sheets
Checked by	Nos A. I.						MD	6	12
Drawn by	Zakharenko O.V.					Texturing of objects	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.10 – Texturing of the objects (A3 format)

Content Module 3. Render setting and visualization in 3ds Max.

Task 3.1. Adding cameras into the scene



Mod.	Num.	Sheet	NfDoc	Signature	Date	Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Checked by	Malik N. O.					3D - computer modeling	Stage	Sheet	Sheets
Checked by	Nos A. I.						MD	8	12
Drawn by	Zakharenko O.V.					Installation and configuration of cameras	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.11 – Lighting sources in the scene (A3 format)

Stamp for sheet 4

						Topic 2. Designing individual interior space. Light and texture settings for rendering					
Mod.	Num.	Sheet	Nºdoc.	Signature	Date						
						3D - computer modeling	Stage	Sheet	Sheets		
Checked by	Malik N. O.						MD	4	12		
Checked by	Nos A. I.										
						Modeling furniture in the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh				
Drawn by	Zakharenko O.V.										

Figure B.12 – Example of the stamp, sheet 4

Stamp for sheet 5

						Topic 2. Designing individual interior space. Light and texture settings for rendering					
Mod.	Num.	Sheet	Nºdoc.	Signature	Date						
						3D - computer modeling	Stage	Sheet	Sheets		
Checked by	Malik N. O.						MD	5	12		
Checked by	Nos A. I.										
						Modeling furniture in the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh				
Drawn by	Zakharenko O.V.										

Figure B.13 – Example of the stamp, sheet 5

Stamp for sheet 6

						Topic 2. Designing individual interior space. Light and texture settings for rendering					
Mod.	Num.	Sheet	Nºdoc.	Signature	Date						
						3D - computer modeling	Stage	Sheet	Sheets		
Checked by	Malik N. O.						MD	6	12		
Checked by	Nos A. I.										
						Texturing of objects	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh				
Drawn by	Zakharenko O.V.										

Figure B.14 – Example of the stamp, sheet 6

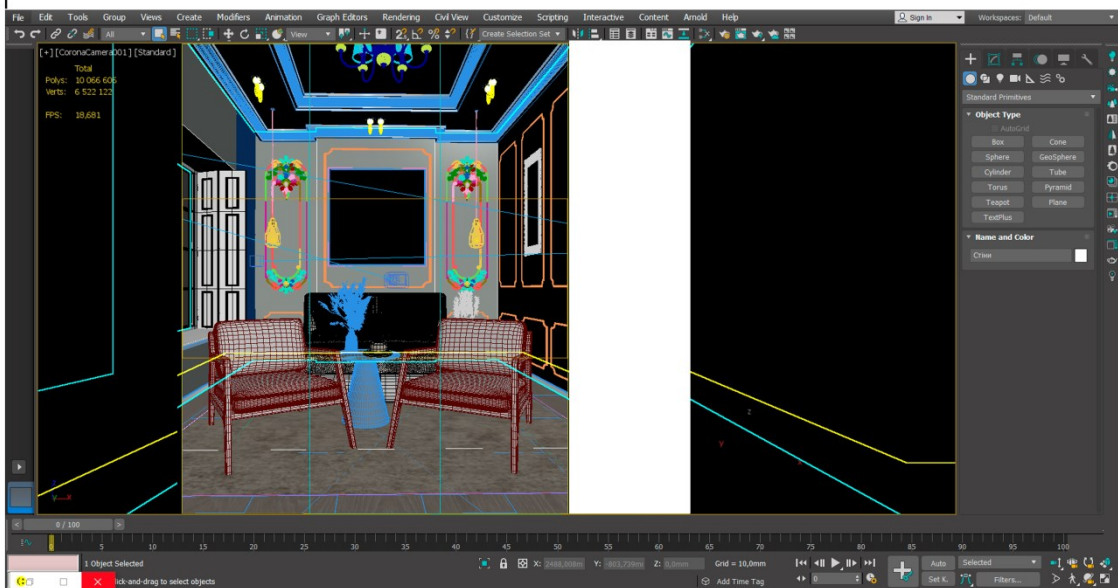
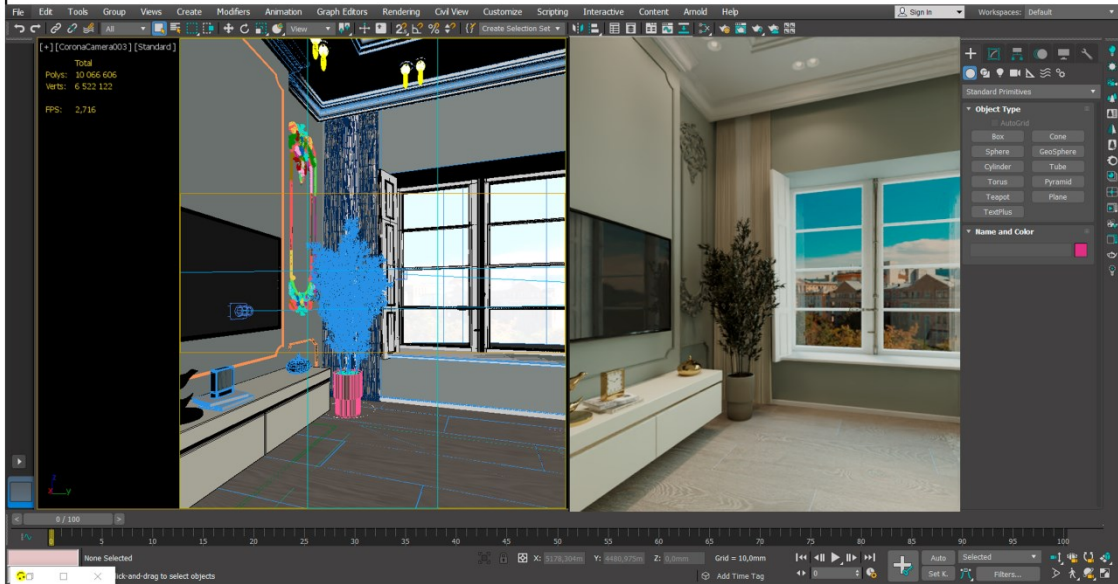
Stamp for sheet 7

						Topic 2. Designing individual interior space. Light and texture settings for rendering					
Mod.	Num.	Sheet	Nºdoc.	Signature	Date						
						3D - computer modeling	Stage	Sheet	Sheets		
Checked by	Malik N. O.						MD	7	12		
Checked by	Nos A. I.										
						Lighting sources in the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh				
Drawn by	Zakharenko O.V.										

Figure B.15 – Example of the stamp, sheet 7

Content Module 2. Detailing: texture, entourage, light and shadow.

Task 2.4 Adding and setting of lighting sources in the scene



Mod.	Num.	Sheet	№Doc.	Signature	Date	Topic 2. Designing individual interior space. Light and texture settings for rendering			
						3D - computer modeling	Stage	Sheet	Sheets
							MD	7	12
						Lighting sources in the scene	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.16 – Installation of the cameras (A3 format)

Content Module 3. Render setting and visualization in 3ds Max.

Task 3. 2. Plan and visualization of the reference

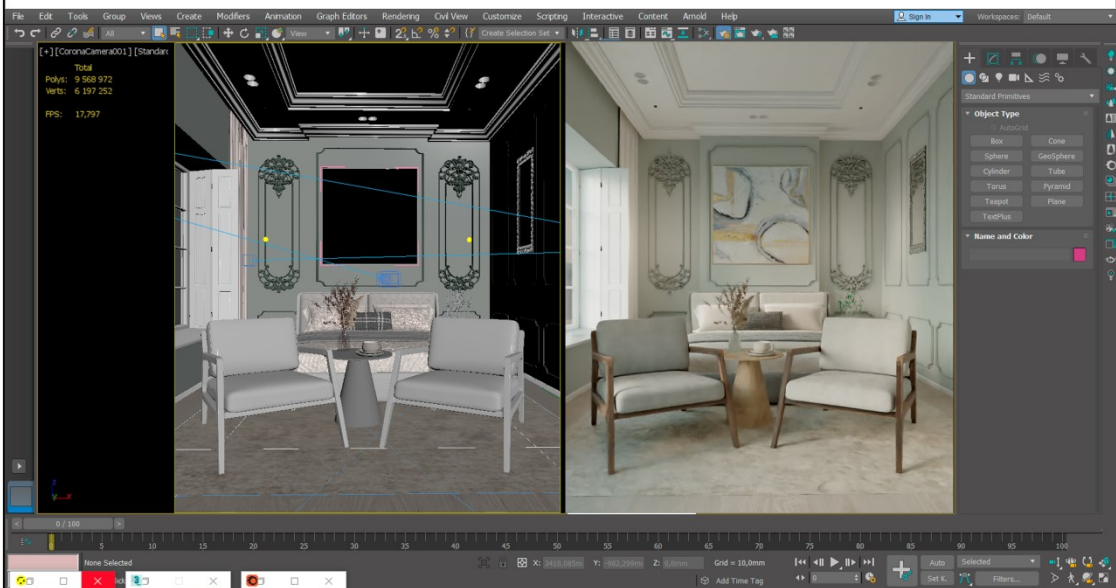


Mod.	Num.	Sheet	N°doc	Signature	Date	Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	9	12
Checked by	Nos A. I.								
Drawn by	Zakharenko O.V.					Work with references	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.17 – Work with the reference (A3 format)

Content Module 3. Render setting and visualization in 3ds Max.

Task 3. 3. Adjusting the camera according to the reference



Mod.	Num.	Sheet	Nºdoc.	Signature	Date	Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Checked by	Malik N. O.					3D - computer modeling	Stage	Sheet	Sheets
Checked by	Nos A. I.						MD	10	12
Drawn by	Zakharenko O.V.					Adjusting the camera according to the reference	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.18 – Adjustment of the camera by reference (A3 format)

Content Module 3. Render setting and visualization in 3ds Max.

Task 3. 4. 1. Final rendering view 1



Mod.	Num.	Sheet	Nfdoc	Signature	Date	Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	11	12
Checked by	Nos A. I.					Final rendering view 1	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		
Drawn by	Zakharenko O.V.								

Figure B.19 – The final visualization (A3 format)

Content Module 3. Render setting and visualization in 3ds Max.

Task 3. 4. 2. Final rendering view 2



Mod.	Num.	Sheet	Ndoc	Signature	Date	Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Checked by	Maik N. O.					3D - computer modeling	Stage	Sheet	Sheets
Checked by	Nos A. I.						MD	12	12
Drawn by	Zakharenko O.V.					Final rendering view 2	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		

Figure B.20 – The final visualization (A3 format)

Stamp for sheet 8

						Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Mod.	Num.	Sheet	Nºdoc.	Signature	Date				
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	8	12
Checked by	Nos A. I.								
						Installation and configuration of cameras	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		
Drawn by	Zakharenko O.V.								

Figure B.21 – Example of the stamp, sheet 8

Stamp for sheet 9

						Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Mod.	Num.	Sheet	Nºdoc.	Signature	Date				
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	9	12
Checked by	Nos A. I.								
						Work with references	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		
Drawn by	Zakharenko O.V.								

Figure B.22 – Example of a stamp, sheet 9

Stamp for sheet 10

						Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Mod.	Num.	Sheet	Nºdoc.	Signature	Date				
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	10	12
Checked by	Nos A. I.								
						Adjusting the camera according to the reference	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		
Drawn by	Zakharenko O.V.								

Figure B.23 – Example of the stamp, sheet 10

Stamp for sheet 11 and 12

						Topic 3. Setting up rendering systems. Designing drawings and graphic exercises for printing.			
Mod.	Num.	Sheet	Nºdoc.	Signature	Date				
						3D - computer modeling	Stage	Sheet	Sheets
Checked by	Malik N. O.						MD	11	12
Checked by	Nos A. I.								
						Final rendering view 1	Ministry of Education and Science of Ukraine O.M. Beketov NUUEKh		
Drawn by	Zakharenko O.V.								

Figure B.24 – Example of the stamp, sheet 11 i 12

Електронне навчальне видання

Методичні рекомендації
до проведення практичних занять та організації самостійної роботи
з навчальної дисципліни

«3D-КОМП'ЮТЕРНЕ МОДЕЛЮВАННЯ»

(Англ. мовою)

*(для здобувачів першого (бакалаврського) рівня вищої освіти
денної форми навчання зі спеціальності – 191 Архітектура та містобудування)*

Укладачі: **МАЛІК** Наталія Олексіївна,
НОС Альона Ігорівна,
ВЕЛІГОЦЬКА Юлія Сергіївна

Відповідальна за випуск *О. В. Смірнова*
За авторською редакцією
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