

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES
OF UKRAINE**

Department of Descriptive Geometry, Computer Graphics and Design

APPROVED	APPROVED
Dean of the Faculty of Design and Engineering	at the meeting of the Department of Descriptive
_____ Ivan ROGOVSKII	Geometry, Computer Graphics and Design
“ ____ ” _____ 2026 p.	Minutes No. 10 dated “27” May 2026
	Head of the Department
	_____ Serhii PYLYPAKA

REVIEWED

Guarantor of the Educational Program G11 “Mechanical Engineering”
_____ Volodymyr BULGAKOV

WORK PROGRAM OF THE ACADEMIC DISCIPLINE

ENGINEERING AND COMPUTER GRAPHICS

Field of Knowledge: G Engineering, Manufacturing and Construction

Specialty: G11 Mechanical Engineering (by specializations)

Educational Program: Mechanical Engineering

Faculty: Engineering and Design

Developers: Viktor NESVIDOMIN, Professor of the Department of Descriptive
Geometry, Computer Graphics and Design, Doctor of Technical
Sciences, Professor;
Tetiana VOLINA, Associate Professor of the Department of Descriptive
Geometry, Computer Graphics and Design, Doctor of Technical
Sciences, Associate Professor.

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Description of the Academic Discipline
“Engineering and Computer Graphics”

Engineering and Computer Graphics is one of the compulsory academic disciplines that forms the basis for training engineers, researchers, and designers in mechanical engineering. The subject of the discipline covers graphical constructions of spatial models carried out using drawing tools and computer technologies in accordance with existing standards.

Degree, Specialty, Educational Program		
Educational Degree	<i>Bachelor</i>	
Specialty	<i>G11 Mechanical Engineering (by specializations)</i>	
Educational Program	<i>Mechanical Engineering</i>	
Discipline Characteristics		
Type	Compulsory	
Total Number of Hours	180	
Number of ECTS Credits	6	
Number of Content Modules	4 / 2 / 3	
Form of Control	<i>Credit / Credit / Exam</i>	
Indicators of the Academic Discipline for Full-time and Part-time Forms of Higher Education		
	Mode of Attendance	
	Full-time	Part-time
Year of Study (Course)	1, 2	1, 2
Semester	1 / 2 / 3	1 / 2 / 3
Lectures	<i>0 / 30 / 0 hours</i>	<i>0 / 30 / 0 hours</i>
Laboratory Classes	<i>15 / 30 / 30 hours</i>	<i>15 / 30 / 30 hours</i>
Self-Study (Independent Work)	<i>15 / 30 / 30 hours</i>	<i>15 / 30 / 30 hours</i>
Weekly Classroom Hours (Full-time)	<i>1 / 4 / 2 hours</i>	

1. Aim, Competences, and Program Learning Outcomes

Aim: Acquisition of theoretical knowledge in the fundamentals of engineering graphics by students, mastering practical skills in executing technical drawings of parts and assemblies, and proficiency in modern graphical systems for creating 3D and 2D models.

Acquisition of Competences:

Integral Competence (IC): The ability of an individual to solve complex specialized tasks and practical problems in a certain field of professional activity or in the learning process, which involves the application of certain theories and methods of relevant sciences and is characterized by complexity and uncertainty of conditions.

General Competences (GC):

- GC2. Ability to apply knowledge in practical situations;
- GC5. Ability to generate new ideas (creativity);

- GC6. Ability to conduct research at an appropriate level;
- GC7. Ability to communicate in a foreign language;
- GC13. Ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and laws of development of the subject area, its place in the general system of knowledge about nature and society, and in the development of society, equipment, and technologies; use various types and forms of physical activity for active recreation and leading a healthy lifestyle;
- GC14. Ability to make decisions and act in compliance with the principle of inadmissibility of corruption and any other manifestations of dishonesty.

Special (Professional) Competences (PC):

- PC2. Ability to apply fundamental scientific facts, concepts, theories, and principles to solve professional tasks and practical problems in mechanical engineering;
- PC3. Ability to evaluate and ensure the quality of performed works;
- PC6. Ability to evaluate the technical and economic efficiency of typical systems and their components based on the application of analytical methods, analysis of analogues, and the use of available data;
- PC9. Ability to carry out commercial and economic activities in the field of mechanical engineering;
- PC10. Ability to develop plans and projects in the field of mechanical engineering under uncertain conditions, aimed at achieving goals taking into account available constraints, and to solve complex tasks and practical problems of product quality improvement and control.

Program Learning Outcomes (PLOs):

- PLO1. Knowledge and understanding of the principles of technological, fundamental, and engineering sciences that underlie mechanical engineering in the relevant field;
- PLO2. Knowledge and understanding of mechanics and mechanical engineering, and prospects for their development;
- PLO3. Know and understand automatic control systems for mechanical engineering objects and processes, and possess skills for their practical use;
- PLO4. Perform engineering calculations to solve complex tasks and practical problems in mechanical engineering;
- PLO5. Analyze engineering objects, processes, and methods;
- PLO7. Prepare manufacturing processes and operate products using automated lifecycle support systems;
- PLO9. Select and apply the necessary equipment, tools, and methods;
- PLO11. Communicate freely with the engineering community orally and in writing in the state and foreign languages;
- PLO13. Understand the structure and services of mechanical engineering enterprises;
- PLO14. Develop machine components and assemblies using Computer-Aided Design (CAD) systems.

2. Curriculum and Structure of the Academic Discipline Full-term full-time (part-time) form of higher education.

Titles of modules and topics	Number of hours													
	Full-time							Part-time						
	weeks	total	including					total	including					
			L	P	Lab	Ind	SS		L	P	Lab	Ind	SS	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Semester 1														
Module 1. <i>Engineering Graphics</i>														
Topic 1. ESCD	1, 2	2			1		1	2			1		1	
Topic 2. Lines, Dimensions, Hatching	3, 4	4			2		2	4			2		2	
Total for Module 1		6			3		3	6			3		3	
Module 2. <i>Rectangular and Axonometric Projections. Rectangular Isometric and Dimetric Projections</i>														
Topic 3. Axonometry. Rectangular Isometric Projection	5, 6	4			2		2	4			2		2	
Topic 4. Rectangular Dimetric Projection	7, 8	4			2		2	4			2		2	
Total for Module 2		8			4		4	8			4		4	
Module 3. <i>Sketching. Technical Drawing. Frontal Dimetric Projection</i>														
Topic 5. Sketch. Technical Drawing	9 – 12	8			4		4	8			4		4	
Total for Module 3		8			4		4	8			4		4	
Module 4. <i>Sections and Cross-sections</i>														
Topic 6. Stepped Section of a Part	13, 14	4			2		2	4			2		2	
Topic 7. Broken (Aligned) Section. Cross-sections	15	4			2		2	4			2		2	
Total for Module 4		8			4		4	8			4		4	
Total Hours for Semester 1		30			15		15	30			15		15	
Semester 2														
Module 1. <i>Sketches, Drawings, and 3D Models of Parts in AutoDesk AutoCAD / Inventor</i>														
Topic 1. Engineering Graphics. DSTU, ISO	1	8	2		4		2	8	2		4		2	
Topic 2. Computer Graphics. Types and Systems of Computer Graphics	2	4	2				2	4	2				2	

Topic 3. Two-Dimensional (2D) Graphics in AutoCAD	3	4	2			2	4	2			2
Topic 4. Drawing Formatting in AutoCAD	4	4	2			2	4	2			2
Topic 5. Three-Dimensional (3D) Graphics in Inventor	5	7	2	3		2	7	2		3	2
Topic 6. Associative Drawings in Inventor	6	8	2	4		2	8	2		4	2
Topic 7. Sheet Metal Modeling in Inventor	7	7	2	3		2	7	2		3	2
Total for Module 1		42	14	14		14	42	14		14	14
Module 2. Graphical Product Documentation in Autodesk Inventor / Fusion 360											
Topic 8. Bolt Joint	8	8	2	2		4	8	2		2	4
Topic 9. Screw Joint	9	8	2	2		4	8	2		2	4
Topic 10. Fitting Joint	10	7	2	2		3	7	2		2	3
Topic 11. Gear Engagement	11	7	2	2		3	7	2		2	3
Topic 12. Key Joint	12	4	2	2			4	2		2	
Topic 13. Welded Joint	13	6	2	2		2	6	2		2	2
Topic 14. Drawings in Archicad	14, 15	8	4	4			8	4		4	
Total for Module 2		48	16	16		16	48	16		16	16
Total Hours for Semester		90	30	30		30	90	30		30	30
Semester 3											
Module 1. Modeling of Assembly Units in AutoDesk Inventor											
Topic 1. Assembly Units. Sketching	1	6			2	4	6			2	4
Topic 2. 2D Modeling in AutoDesk Inventor	2	2			2		2			2	
Topic 3. 3D Modeling in AutoDesk Inventor	3	4			2	2	4			2	2
Topic 4. Drawings in AutoDesk Inventor	4	6			2	4	6			2	4
Topic 5. Computer 2D Graphics in AutoDesk AutoCAD	5	4			2		4			2	
Total for Module 1		20			10	10	20			10	10
Module 2. Detailing in SolidWorks											

Topic 6. Detailing. SolidWorks Interface	6	6			2	4	6			2	4
Topic 7. Modeling of Simple Parts	7	2			2		2			2	
Topic 8. Creation of Complex Part Models	8	4			2	2	4			2	2
Topic 9. Drawings in SolidWorks	9	6			2	4	6			2	4
Topic 10. SolidWorks Add-ins. Visualization	10	2			2		2			2	
Total for Module 2		20			10	10	20			10	10
Module 3. <i>Building Logbook (Passport) in ArchiCad</i>											
Topic 11. 3D Modeling in Archicad	11	10			4	6	10			4	6
Topic 12. Documentation in Archicad	12	2			2		2			2	
Topic 13. Interior Design	14	8			4	4	8			4	4
Total for Module 3		20			10	10	20			10	10
Total Hours for Semester 3		60			30	30	60			30	30

3. Lecture Topics

No	Title on the Topic	Number of hours
Semester 2		
1	Engineering Graphics. GOST, DSTU, ISO	2
2	Computer Graphics. Types and Systems of Computer Graphics	2
3	Two-Dimensional Graphics. AutoCAD	2
4	Drawing Formatting in AutoCAD	2
5	Three-Dimensional (3D) Graphics in Inventor	2
6	Associative Drawings in Inventor	2
7	Sheet Metal Parts	2
8	Bolt Joint	2
9	Screw Joint	2
10	Fitting Joint	2
11	Gear Engagement	2
12	Key Joint	2
13	Welded Joint	2
14	Drawings in Archicad	4
Total Hours		30

4. Laboratory Class Topics

№	Title on the Topic	Number of hours
Semester 1		
1	ESCD	1
2	Lines, Dimensions, Hatching	2
3	Axonometry. Rectangular Isometric Projection	2
4	Rectangular Dimetric Projection	2
5	Sketch. Technical Drawing	4
6	Sections. Stepped Section of a Part	2
7	Broken Section of a Part and its Inclined Cross-section	2
Total Hours		15
Semester 2		
1	Engineering Graphics. GOST, DSTU, ISO	2
2	Computer Graphics. Types and Systems of Computer Graphics	2
3	Two-Dimensional Graphics. AutoCAD	2
4	Drawing Formatting in AutoCAD	2
5	Three-Dimensional (3D) Graphics in Inventor	2
6	Associative Drawings in Inventor	2
7	Sheet Metal Parts	2
8	Bolt Joint	2
9	Screw Joint	2
10	Fitting Joint	2
11	Gear Engagement	2
12	Key Joint	2
13	Welded Joint	2
14	Drawings in Archicad	4
Total Hours		30
Semester 3		
1	Assembly Units. Sketching	2
2	2D Modeling in AutoDesk Inventor	2
3	3D Modeling in AutoDesk Inventor	2
4	Drawings in AutoDesk Inventor	2
5	Computer 2D Graphics in AutoDesk AutoCAD	2
6	Detailing. SolidWorks Interface	2
7	Modeling of Simple Parts	2
8	Creation of Complex Part Models	2
9	Drawings in SolidWorks	2
10	SolidWorks Add-ins. Visualization	2

11	3D Modeling in Archicad	4
12	Documentation in Archicad	2
13	Interior Design	4
Total Hours		30

5. Self-Study Topics (Independent Work)

№	Title on the Topic	Number of hours
Semester 1		
1	Drawing Font	3
2	Lines, Dimensions, Hatching	2
3	Rectangular Isometric Projection of a Part from Life (from Nature)	2
4	Rectangular Dimetric Projection of a Part	2
5	Sketch of a Part and its Technical Drawing	2
6	Stepped Section	2
7	Broken Section, Inclined Cross-section	2
Total Hours		15
Semester 2		
1	Sketches and Working Drawings of Parts from Nature	4
2	Structural Elements of Parts	4
3	Working Drawings of Bent (Sheet Metal) Parts	4
4	Bolt and Screw Joints	4
5	Fitting Joints	4
6	Gear Joint (Engagement)	5
7	Welded Joint	5
Total Hours		30
Semester 3		
1	Sketches and Drawings of an Assembly Unit	10
2	Detailing	10
3	Building Logbook (Passport)	10
Total Hours		30

6. Methods and Tools for Diagnosing Learning Outcomes:

- Oral or written questioning;
- Interview / Colloquium;
- Testing;
- Defense of laboratory and graphical works;
- Self-assessment;
- Midterm/written tests.

7. Teaching Methods:

- Problem-based learning method;
- Practice-oriented learning method;
- Case-study method;
- Project-based learning method;
- Blended learning method;
- Research-based learning method;
- Teamwork method;
- Gamified learning method.

8. Evaluation of Learning Outcomes.

The knowledge of higher education students is evaluated on a 100-point scale, which is converted into the national grade according to the current “Regulations on Examinations and Credits at NULES of Ukraine”.

8.1. Distribution of Points by Types of Academic Activities

Type of Educational Activity	Learning Outcomes	Evaluation
Semester 1		
Module 1. State Standards of Ukraine		
Lesson 1. ESCD	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including knowledge, understanding, and the ability to apply standards regulating drawing design rules in different countries; drawing font writing skills; ability to properly apply various line types on drawings according to standards; dimensioning skills on drawings; ability to properly apply hatching to specify different materials on drawings.	5
Laboratory Work 1. ESCD		5
Self-Study 1. Drawing Font		30
Test 1. ESCD		10
Lesson 2. Lines. Dimensions. Hatching		5
Laboratory Work 2. Lines. Dimensions. Hatching		5
Self-Study 2. Lines. Dimensions. Hatching		30
Test 2. Lines. Dimensions. Hatching		10
Total for Module 1		100
Module 2. Rectangular and Axonometric Projections. Rectangular Isometric and Dimetric Projections		
Lesson 3. Axonometry. Rectangular Isometric Projection	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including understanding principles and skills in creating axonometric projections to display 3D objects on a 2D plane; ability to construct rectangular isometric projections and rectangular dimetric projections of parts.	5
Laboratory Work 3. Axonometry. Rectangular Isometric Projection		5
Self-Study 3. Rectangular Isometric Projection of a Part from Life		30
Test 3. Axonometry. Rectangular Isometric Projection		10
Lesson 4. Rectangular Dimetric Projection		5

Laboratory Work 4. Rectangular Dimetric Projection		5	
Self-Study 4. Rectangular Dimetric Projection of a Part		30	
Test 4. Rectangular Dimetric Projection		10	
Total for Module 2		100	
Module 3. Sketching. Technical Drawing. Frontal Dimetric Projection			
Lesson 5. Sketch. Technical Drawing	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including creating sketches and technical drawings, including parts from life, for their quick and accurate representation; constructing representations of parts in frontal dimetric projection.	5	
Laboratory Work 5. Sketches and Technical Drawings. Frontal Dimetric Projection		5	
Self-Study 5. Sketch of a Part and its Technical Drawing		30	
Test 5. Axonometry		10	
Control Work 1. Technical Drawing of a Part from Life		50	
Total for Module 3			100
Module 4. Sections and Cross-sections			
Lesson 6. Sections. Stepped Section of a Part	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including creating and applying different types of sections (simple, combination of a view and a section, stepped, broken) and cross-sections, which is necessary to represent the internal structure of parts and structures. Laboratory work 7 involves the practical application of a broken section of a part and creating its inclined cross-section, which develops skills in visualization and documentation of complex technical solutions.	5	
Laboratory Work 6. Stepped Section of a Part		5	
Self-Study 6. Stepped Section		30	
Test 6. Sections		10	
Lesson 7. Broken Section. Cross-sections		5	
Laboratory Work 7. Broken Section of a Part and its Inclined Cross-section		5	
Self-Study 7. Broken Section, Inclined Cross-section		30	
Test 7. Cross-sections		10	
Total for Module 4			100
Coursework / Academic Work			70
Credit (Final Assessment)		30	
Total for the Course		100	
Semester 2			
Module 1. Sketches, Drawings, and 3D Models of Parts in AutoDesk AutoCAD / Inventor			
Laboratory Work 1. Sketch of a Part of Revolution from Nature	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including creating sketches, technical drawings, and working drawings both manually and using AutoCAD software; being able to sketch parts of revolution and cast parts from life;	3	
Lesson 1. Sketch of a Part of Revolution from Life		3	
Laboratory Work 2. Sketch of a Cast Part. Technical Drawing		3	

Lesson 2. Sketch of a Cast Part. Technical Drawing	performing working drawings of parts in AutoCAD, formatting them according to standards; being able to create 3D models of parts in Inventor and drawings of flange-type parts, body and sheet metal parts; understanding the structural elements of parts.	3
Laboratory Work 3. Working Drawing of a Part of Revolution in AutoCAD		3
Lesson 3. Working Drawing in AutoCAD		3
Laboratory Work 4. Working Drawing of a Cast Part in AutoCAD		3
Lesson 4. Drawing Formatting in AutoCAD		3
Laboratory Work 5. 3D Modeling Operations for Parts in Inventor		3
Lesson 5. 3D Modeling Operations for Parts in Inventor		3
Laboratory Work 6. Execution of Part Drawings in Inventor		3
Lesson 6. Execution of Part Drawings		3
Laboratory Work 7. Execution of Sheet Metal Part Drawings in Inventor		3
Lesson 7. Sheet Metal Parts		3
Control Work 1. Plate Drawing in AutoCAD		5
Control Work 2. Body Part Drawing		5
Control Work 3. Sheet Metal Part Drawing		5
Self-Study 1. Sketches and Working Drawings of Parts from Life		10
Self-Study 2. Structural Elements of Parts		10
Self-Study 3. Working Drawings of Bent Parts		10
Test 1. Formats, Scales, Lines, Fonts (Training/Mock Test)		3
Test 2. Views, Sections, Cross-sections, Dimensions		5
Test 3. Autodesk AutoCAD / Inventor		5
Total for Module 1		100
Module 2. Graphical Product Documentation in Autodesk Inventor / Fusion 360		
Laboratory Work 8. Bolt Joint	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including knowing and understanding theoretical foundations, features, and	3
Lesson 8. Bolted Joints		3
Laboratory Work 9. Screw Joint		3
Lesson 9. Screw and Stud Joints		3

Laboratory Work 10. Fitting Joint	applications of permanent and detachable joints in engineering structures: bolted, screwed, geared, welded, stud, fitting, and key joints; being able to create 3D models and drawings of various structural elements using Inventor software and analyze them; using practical modeling skills for different joint types; creating assembly and working drawings, specifications, which will help develop documentation skills for complex engineering units; applying acquired knowledge in practice.	3
Lesson 10. Pipe Joint		3
Laboratory Work 11. Gear Engagement		3
Lesson 11. Gear Engagement		3
Laboratory Work 12. Key Joint		3
Lesson 12. Joint on a Shaft		3
Laboratory Work 13. Welded Joint		3
Lesson 13. Permanent Joints		3
Lesson 14. Computer Graphics Systems		3
Self-Study 4. Bolt and Screw Joints		10
Self-Study 5. Fitting Joints		10
Self-Study 6. Gear Joint		10
Self-Study 7. Welded Joint		10
Control Work 4. Assembly Drawing		5
Control Work 5. Working Drawing of a “Shaft” Type Part		5
Test 4. Threaded Joints		3
Test 5. Assembly Units		5
Total for Module 2		100
Coursework / Academic Work		70
Credit (Final Assessment)		30
Total for the Course	100	
Semester 3		
Module 1. Modeling of Assembly Units in AutoDesk Inventor		
Laboratory Work 1. Sketches of Parts	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including knowing the principles of creating sketches of parts, fundamentals of working with the Autodesk Inventor interface; being able to use Autodesk Inventor to create 3D models of parts, perform assembly operations to create 3D models of products, execute working drawings, and specifications; being able to use AutoCAD to create and edit drawings; applying the obtained knowledge to create drawings of parts from life and assembly drawings of products; effectively using modern tools to create models of parts and their drawings.	5
Lesson 1. Assembly Units. Sketching		5
Laboratory Work 2. AI Interface. Creation of 3D Models of Parts		5
Lesson 2. Autodesk Inventor. 2D Sketches. 3D Models of Parts		5
Laboratory Work 3. Assembly Operations for 3D Models of Products in AI		5
Lesson 3. Products. Assembly Operations in AI		5
Laboratory Work 4. Execution of Working Drawings in AI		5
Lesson 4. Drawings in AI		5
Laboratory Work 5. Execution of Drawings in AutoCAD		5
Lesson 5. Drawings in AutoCAD		5
Test 1. Sketches and Assembly Drawings		5

Control Work 1. Drawing of a Part from Nature		10	
Self-Study 1. Sketches and Drawings of an Assembly Unit		30	
Extra Assignment 1. 3D Model of Product		5	
Total for Module 1		100	
Module 2. Detailing in SolidWorks			
Laboratory Work 6. Detailing. SW Interface	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including knowing the principles of detailing assembly units, SolidWorks interface, methods of creating 3D models of parts and assembly drawings in SolidWorks; being able to use SolidWorks for solid modeling of parts and assembly units; using additional SolidWorks features (color, scenes, textures, and model studies); creating drawings of parts in SolidWorks, including from an assembly drawing of a product; effectively using modern tools to create models of parts and their drawings.	5	
Lesson 6. SW Interface		5	
Laboratory Work 7. 3D Models of Parts in SW		5	
Lesson 7. Solid Modeling in SW		5	
Laboratory Work 8. 3D Models of Assembly Units in SW		5	
Lesson 8. Modeling of Assembly Units in SW		5	
Laboratory Work 9. Drawings in SW		5	
Lesson 9. Drawings in SW		5	
Laboratory Work 10. Color, Scenes, Textures, Studies in SW		5	
Lesson 10. SW Add-ins		5	
Test 2. Detailing		5	
Control Work 2. Part Drawing from an Assembly		10	
Self-Study 2. Detailing in SW		30	
Extra Assignment 2. 3D Model of a Product		5	
Total for Module 2			100
Module 3. Building Logbook (Passport) in ArchiCad			
Laboratory Work 11. ArchiCAD Interface Setup	PLO 1, 2, 3, 4, 5, 7, 9, 11, 13, 14. Including being able to set up the ArchiCAD interface; knowing the principles of 3D modeling in this software; being able to create structural elements of a building and perform 3D modeling in ArchiCAD; using ArchiCAD to document projects and create building logbooks; understanding methods of building presentations and interior design in ArchiCAD; applying knowledge to create a garage	5	
Lesson 11. 3D Modeling in Archicad		5	
Laboratory Work 12. Structural Elements of a Building		5	
Lesson 12. 3D Modeling in Archicad		5	
Laboratory Work 13. Execution of a Building Logbook		5	
Lesson 13. Documentation in Archicad		5	
Laboratory Work 14. Presentation Building		5	
Lesson 14. Interior Design		5	

Control Work 3. Garage Exterior	exterior and an apartment interior.	10
Control Work 4. Apartment Interior		10
Test 3. Archicad		10
Self-Study 3. Building Logbook (Passport)		30
Total for Module 3		100
Coursework / Academic Work		70
Exam (Final Assessment)		30
Total for the Course		100

8.2. Grading Scale for Higher Education Students

Higher education student's rating, points	Grade according to the national system (exams/credits)
90-100	Excellent
74-89	Good
60-73	Satisfactory
0-59	Unsatisfactory

8.3. Course Policies

Policy on Deadlines and Retakes:	Laboratory and self-study works submitted in violation of deadlines without valid reasons are evaluated with a lower grade. Module retakes occur with the permission of the lecturer if there are valid reasons (e.g., sick leave).
Academic Integrity Policy:	Cheating during written tests, credits, and examinations is strictly prohibited (including the use of mobile devices).
Attendance Policy:	Attendance at classes is mandatory. For objective reasons (e.g., illness, international internship), learning can take place individually (online upon agreement with the Dean of the Faculty). Midterm/written tests are taken exclusively in the classroom.

9. Information and Methodological Support:

– Electronic training course of the discipline on the NULES of Ukraine educational portal eLearn:

<https://elearn.nubip.edu.ua/course/view.php?id=2461> Part 1

<https://elearn.nubip.edu.ua/course/view.php?id=2062> Part 2

<https://elearn.nubip.edu.ua/course/view.php?id=2462> Part 3

Links to digital educational resources: <https://www.autodesk.com/>

- Lecture notes and presentations (in electronic form);
- Textbooks, study guides, manuals;
- Methodological materials on the study of the discipline for higher education students of full-time and part-time forms of study.

10. Recommended Sources of Information

Primary

1. ESCD DSTU 3321-96. Unified System for Design Documentation ESCD GOST 2.301-68 – 2.317-69; 2.104-68, 2.701-84, 2.702-75 – 2.747-68 and others.
2. Kukharets S. M., Sheludchenko B. A., Shubenko V. O., Medvedskyi O. V., Pluzhnikov O. B. Descriptive Geometry, Engineering Graphics and CAD. Course Projecting / edited by S. M. Kukharets. – Zhytomyr: Polissia National University, 2020. – 89 p.
3. Verkhola A. P., Kovalenko B. D. et al. Engineering Graphics: Drawing and Computer Graphics. Study Guide. Kyiv: Karavela, 2016. – 256 p.
4. Ivanov V. P., Kovalchuk O. M. Fundamentals of Computer Graphics. Study Guide. Lviv: Lviv Polytechnic Publishing House, 2018. – 200 p.
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