

MINISTRY OF DEFENCE OF UKRAINE

MILITARY ACADEMY (ODESA)

**EDUCATIONAL PROGRAMME OF THE
PROFESSIONAL MILITARY EDUCATION COURSE**

***TACTICAL LEVEL PROFESSIONAL COURSE OF LOGISTICS FORCES
(AMMUNITION, EXPLOSIVE DEVICES, LIGHTING AND SIGNALLING
MEANS), L-1B (AEDLSM)***

Military Specialty **Occupational** 707400 *"Storage and repair of ammunition, detonators, lighting and signalling means, explosives"*

APPROVED

by the Academic Council of the Military Academy
(Odesa) (protocol dated "____" ____ 20____
No.____)

Head of the Academic Council
Military Academy (Odesa)
Major General

Andrii KOVALCHUK

Put into effect by order of the Commandant of the
Military Academy (Odesa) dated " __ " ____ 20____
No.

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**LETTER OF AGREEMENT
OF THE EDUCATIONAL PROGRAMME OF THE
PROFESSIONAL MILITARY EDUCATION COURSE**

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(AMMUNITION, EXPLOSIVE DEVICES, LIGHTING AND SIGNALLING
MEANS), L-1B (AEDLSM)***

Military Occupational 707400 *"Storage and repair of ammunition, detonators, lighting and signalling means, explosives"*
Specialty

APPROVED

Director of the Department of Military
Education and Science of the Ministry of
of Defence of Ukraine

Volodymyr MIRNENKO
" " _____ 20__

APPROVED

Head of the Central Directorate of
Military Education and Science of the
General Staff of the Armed Forces of
Ukraine
colonel

Oleh PAVLOVSKYI
" " _____ 20__

APPROVED

Commander of the Logistics Forces
of the Armed Forces of Ukraine
Brigadier General

Volodymyr KARPENKO
" " _____ 20__

Developed and submitted

Head of the Working Group

Deputy Chief of the Central Department of
Weapon and Destruction assets supply of
Armament branch of the Logistics Forces
Command of the Armed Forces of Ukraine
Colonel

Serhii NAUMENKO
" " _____ 20__

FOREWORD

Developed by the Working Group of the Logistics Forces Command of the Armed Forces of Ukraine and the Military Academy (Odesa).

Order of the Logistics Forces Commander of the Armed Forces of Ukraine dated 01 March 2024 No. 60.

The Head of the Working Group

Serhii NAUMENKO, Deputy Head of the Central Department of Weapon and Destruction assets supply of Armament branch of the Logistics Forces Command of the Armed Forces of Ukraine, Colonel.

Members of the working group:

Stanislav NIKUL, Head of the Department of Rocket and Artillery Armament of the Faculty of Specialists of Rocket and Artillery Armament Training of the Military Academy (Odesa), PhD in Engineering, Associate Professor, Colonel;

Oleh KRAVCHUK, Professor of the Department of Rocket and Artillery Armament of the Faculty of Specialists of Rocket and Artillery Armament Training of the Military Academy (Odesa), PhD in Engineering, Senior Researcher, Colonel;

Viacheslav GOLOVAN', Professor of the Department of Rocket and Artillery Armament of the Faculty of Specialists of Rocket and Artillery Armament Training of the Military Academy (Odesa), PhD in Engineering, Professor, employee of the Armed Forces of Ukraine.

ACCOUNTED FOR:

1. Professional standard of a tactical level officer of the Armed Forces of Ukraine.

2. Comments from internal and external stakeholders.

3. Suggestions from students.

4. Combat experience.

1. PROFILE OF THE EDUCATIONAL PROGRAMME OF THE PROFESSIONAL MILITARY EDUCATION COURSE

1 – General information	
Full Name of the Military Higher Education Institution	Military Academy (Odesa)
Title of the Document on Completion and Scope of the Educational Programme of the Professional Military Education Course	<p>Certificate of completion of the educational programme of the course "Professional course of tactical level ammunition, explosive devices, lighting and signalling means, L-1B (AEDLSM), according to MOS 707400".</p> <p>Scope of the educational programme: 23 ECTS credits</p>
Prerequisites.	Bachelor's degree or higher; completion of the basic tactical course L-1A
Language(s) of instruction	Ukrainian (English)
Validity of the educational programme of the professional education course	Until the update or introduction of a new educational programme
2 – Aim of the educational programme	
<p>Training of a tactical level officer who is competent in the operation of ammunition, explosive devices, lighting and signalling equipment, capable of performing assigned tasks in positions with the staff category "senior lieutenant", carry out professional activities in accordance with official duties, be a leader in the military team, make decisions in accordance with the requirements of governing documents and critical analysis of the situation, be responsible for them, be responsible for subordinates.</p> <p>Performing official (special) duties that determine the scope of tasks assigned by the position and other regulations</p>	
3 – Characteristics of the educational programme	
Subject area	<p>Field of knowledge: "14 Electrical Engineering".</p> <p>Speciality: "141 Electricity, electrical engineering and electromechanics".</p> <p>Specialisation: "Ammunition, explosive devices, lighting and signalling means"</p>
The main focus of the educational programme of the professional education course	Professional military education for military service in typical positions defined in the professional standard of a tactical officer
Programme features	Training in the system of multi-level professional military education for officers of the Armed Forces of Ukraine. Specifics of combat experience gained during the Russo-Ukrainian war
4 – The employability and further education prospects of graduates	
Employability	<p>Typical positions of persons with the rank of senior lieutenant, as defined in the professional standard for tactical level officers:</p> <p>repair platoon commander;</p> <p>deputy company commander for weapon;</p>

	<p>assistant head of the storage section; head assistant of the accounting and operation section; engineer of the technical control section</p>
Further education	Preparation under the educational programme of the professional military education course “Command Course of Tactical Level of Management of Operation of Weapons of Mass Destruction, L-1C (MOWMD)”
5 – Teaching and assessment	
Teaching and learning	The main types of learning activities for teaching the components of the educational programme: lectures; seminars, group, practical, group exercises; tactical (tactical formation, tactical and special) independent work, including at the field training base
Assessment	Assessment of learning outcomes of course participants includes the full range of evaluation methods provided by the educational component programs and is conducted using the 100-point scale, the ECTS scale, and the national grading scale
6 – Programme competences	
Military specific competences (MSC)	MSC 1 Ability to perform specialised logistics tasks in the area of professional activity
	MSC 2 Ability to organise the procedure for accounting, categorisation, disposal and storage of missiles and ammunition, as well as weapons in military units
	MSC 3 Ability to use knowledge of the structure of artillery devices to perform practical tasks in professional activities
	MSC 4 Ability to use knowledge of the structure and operation of missiles and ammunition in their handling
7 – Programme learning outcomes	
Military specialised training (MST)	LOmst 1 Apply knowledge of logistics support of military units
	LOmst 2 Organise and conduct accounting, categorisation, disposal, and storage of missiles and ammunition, as well as weapons, within sub-units of military units
	LOmst 3 Use artillery instruments, monitor their technical condition, carry out alignments and inspections of instruments. Organise the operation and repair of artillery instruments in the troops. To master new models of artillery devices independently. Monitor compliance with safety measures in the operation of artillery instruments
	LOmst 4 Use knowledge of the basic principles of the structure and design of missiles and ammunition to properly organise their operation and preparation for combat use
8 – Resource support for programme implementation	
Personnel Support	<p>The academic staff involved in the educational programme are full-time employees of the Military Academy, some of whom have academic degrees, academic titles and a proven level of scientific and professional activity. Professional competences are developed by professionals with professional experience.</p> <p>The practice-oriented nature of the educational programme involves the wide participation of practitioners who are relevant to the programme, which enhances the synergistic relationship between theoretical and practical training.</p>

	<p>The head and members of the working group on the development of the programme, as well as the teaching staff that ensures the implementation of the educational programme meet the requirements set by the Ministry of Defence of Ukraine</p>
Material and technical support	<p>The material and technical base of the Military Academy (Odesa) and the Military Academy's Educational Process Support Centre is used to implement the competences and learning outcomes specified in the educational programme. The material and technical support meets the requirements for the provision of educational services and is sufficient to ensure the quality of the educational process, in particular: classrooms; computer classes (laboratories); specialised laboratories; gyms, sports grounds; library, reading room; multimedia equipment; premises for research and teaching staff; barracks premises; dining room, etc.</p>
Information and educational support	<p>Educational and methodological support is developed in accordance with the current regulatory and legislative documents of the Ministry of Education and Science of Ukraine and orders of the Ministry of Defence of Ukraine, and consists of the following materials:</p> <ul style="list-style-type: none"> instructional and methodological materials for practical classes; teaching and methodological materials for all types of classes; methodical instructions for the performance of works (projects); methodological instructions for organising independent work; programmes of all types of practical training; diagnostic tools. <p>The library fund is used in the training, including teaching materials, educational and methodological developments of teaching staff.</p> <p>The programme is implemented using the virtual learning environment of the Military Academy (Odesa), author's developments, textbooks and manuals, and other teaching and methodological materials.</p> <p>The official website of the Academy (http://vaodesa.mil.gov.ua/) contains information about educational, scientific and educational activities, structural units, admission rules, contacts, and users have the opportunity to use all available library resources. There is technological and material and technical support for the educational process</p>

2. LIST OF COMPONENTS OF THE EDUCATION PROGRAMME OF THE PROFESSIONAL MILITARY EDUCATION COURSE AND THE CORRESPONDENCE OF PROGRAMME COMPETENCES AND LEARNING OUTCOMES TO THE COMPONENTS OF THE EDUCATION PROGRAMME

2.1. List of EP components.

Course code	Components of the educational programme (academic disciplines/modules)	Number of credits	Form of final control
MS 01	Fundamentals of logistics support	5	Examination
MS 02	Organisation of supply and maintenance of missiles and ammunition within sub-units of a military unit	5	Examination
MS 03	Design and operation of artillery devices	5	Examination
MS 04	Missiles and ammunition	6	Examination
MS 05	Organisation of the use of special software based on SAP S/4HANA "LIS 1.0" information and communication system for logistics management	2	Credit
Total credits under the programme		23	

2.2 Correspondence of programme competences to the components of the educational programme.

	MS 01	MS 02	MS 03	MS 04	MS 05
MSC 1	+				+
MSC 2		+			+
MSC 3			+		
MSC 4				+	

2.3 Correspondence of learning outcomes to the components of the educational programme.

	MS 01	MS 02	MS 03	MS 04	MS 05
LOmst	+				+
LOmst		+			+
LOmst			+		
LOmst				+	

3. DISTRIBUTION OF EDUCATIONAL PROGRAMME COMPONENTS BY COURSES AND SEMESTERS OF STUDY

No. s/n	Academic discipline code	Name of the discipline (module)	Distribution by semesters		Number of ECTS credits	Number of hours					Control measure	Independent work	Contact hours by courses and semesters*												
			exams	graded credit		Total amount of	Contact hours						1 course		2 course		3 course		4 course						
							Total hours	including					1	2	3	4	5	6	7	8					
								lectures	group sessions, seminars	practical, laboratory															
			Semesters																						
Number of weeks in the semester																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
1	MS 01	Fundamentals of logistics support	8 semester - 6 hrs	7 semester - 2 hrs	5	150	100	8	54	30	8	50							3	2					
2	MS 02	Organisation of supply and maintenance of missiles and ammunition within sub-units of a military unit	7 semester - 6 hrs	4 semester - 2 hrs.	5	150	100	4	50	38	8	50				1	1	2	1						
3	MS 03	Design and operation of artillery devices	6 semester - 6 hrs.	5 semester - 2 hrs.	5	150	100	6	58	28	8	50					2	3							
4	MS 04	Missiles and ammunition	8 semester - 4 hrs.	5 semester - 2 hrs.	6	180	120	8	94	12	6	60				1,5	0,5	1,5	1,5	1					
5	MS 05	Organisation of the use of special software based on SAP S/4HANA "LIS 1.0" information and communication system for logistics management	-	8 semester - 2 hrs.	2	60	52	-	22	26	4	8								2					
Total:					23	690	472	26	278	134	34	218				2,5	3,5	6,5	5,5	5					
Total number of																									
Number of hours per week																	6	6	6	6	6	6	6		
Number of exams																					1	1	2		
Number of graded credits (credits)																					1	2		1	1

4. PROGRAMMES OF ACADEMIC DISCIPLINES OF THE EDUCATIONAL PROGRAMME

Fundamentals of logistics support

General purpose of the component of the educational programme.

Objective.

Upon completion of the course, the cadet is expected to

know:

- the main provisions of the guiding documents on the organisation of logistics (technical) support of units and subunits;
- the procedure for manning troops with weapons, means of close combat and reconnaissance, means of destruction, military-technical property;
- the concept of material resources and their stocks, the standards for accumulation, maintenance, and echeloning of missiles and ammunition;
- the organisation of technical support, the production capabilities, and the deployment of military repair units in the field;
- the purpose, technical specifications, and equipment of mobile maintenance and repair vehicles, as well as the procedures for their deployment and withdrawal;
- the organisational and staffing structure of the repair units of the Land Forces;
- the procedure for organising the protection, security and defence of the repair unit in combat conditions;
- the procedures for commanding a repair unit under combat conditions;
- military decision-making process in the NATO forces;
- the procedures for organising the technical support of a military unit during the preparation for combat and the conduct of combat (troop movements);

be able to:

- to develop operational documents for the provision of means of engagement and artillery-technical support for a military unit, and to determine solutions for supplying the appropriate material and technical resources;
- apply theoretical knowledge of the principles and nature of modern combined-arms combat (tactical operations) during the preparation and execution of technical support tasks for units and subunits;

understand the assigned task and assess the tactical situation in terms of technical support, and represent the results of this assessment on a topographic map;

plan, organise and control the conduct of repair and maintenance of weapons, close combat systems and reconnaissance equipment;

organise the technical inspection of ammunition and the scheduled maintenance of missiles;

organise the protection, security, and defence, as well as the engineering works and camouflage of the deployment area of a repair unit.

Organisational and methodological instructions.

The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and learning). It provides a scientific and pedagogical description of the forms and methods of teaching, indicates the most appropriate combinations to achieve a certain level of learning, determines the conditions for their most effective use.

To achieve the main learning objective, the programme provides for the following forms of learning:

frontal form of learning, when all students perform the same task at the same time under the supervision of a teacher;

group form of training, when students are combined into groups (departments) depending on the staffing structure of the unit, which work in parallel;

individual form of training, when students complete tasks sequentially, one by one.

At the same time, depending on the need to achieve the levels of knowledge or skills, the teacher should use the following methods:

verbal and visual;

training;

situational and cognitive.

The verbal-visual method is used when the instructor systematically and consistently delivers the training material and demonstrates the objects under study in order to provide the trainees with new knowledge and to develop the appropriate conceptual understanding.

The training (reproductive) method consists in performing a sequence of integrated actions in accordance with the algorithm specified by the instructor (a pre-established procedure) in order to develop the necessary skills and to ensure the cohesion of military organisational structures.

The situational-cognitive method consists in conducting the review and discussion of actual (or probable) actions, familiarising trainees with the experience of command and control of troops (forces) in military conflicts, and developing information and analytical skills.

The above-mentioned methods provide the trainees with knowledge, skills, and abilities; however, to develop their creative capabilities, the instructor should employ problem-based learning methods.

Problem-based teaching is when the class leader poses a problem to the students, solves it himself, but at the same time shows the ways of solving it, reveals the course of his thought. The immediate result of problem-based teaching should be that the student learns the method and logic of solving a particular problem, but not yet the ability to apply it independently. This method teaches students how to search for knowledge and helps them to develop creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to solving problems on their own by first teaching them how to perform certain elements of the solution. It is used in group exercises when the method of finding the optimal solution is determined by the class leader, but the solution is found by the student.

Problem-based methods provide a deep assimilation of knowledge at the level of its creative application, mastery of creative thinking methods, and practical experience.

During lecture classes.

The lecture is the main type of classroom teaching intended for mastering the theoretical material of the topic.

The main purpose of the lecture is to systematise the basis of scientific knowledge and practical experience on the topic, the state and prospects of development of management science, theory and practice of management activities of a military leader, to focus on the most complex and nodal issues of the educational material. The lecture should be problem-based, stimulate active cognitive activity of students, and promote creative thinking. In order to enhance the cognitive activity of servicemen and to develop their creative thinking, technical teaching aids should be skilfully used during lectures in combination with active forms and methods of lecturing. Classes should be conducted using the method of oral presentation of educational material, with individual questions and educational elements worked out in the form of a dialogue between the teacher and the students and by asking them problematic questions.

During group sessions.

A group lesson is a type of training session during which the teacher presents new educational material in a verbal and visual way, controls the students' understanding of this material by questioning and helps to consolidate it.

Group classes are held for the purpose of detailed study by students of the issues and problems discussed in lectures and detailed consideration of topical issues of the educational material. The main teaching methods used are explanation with demonstration and discussion. Technical means of information transmission, tables, diagrams, slides, film and posters should be used to ensure visualisation during the classes.

During practical sessions.

Practical training is a type of training session during which the teacher organises the mastering of the theoretical provisions of the topic through individual performance of specially designed tasks and promotes the formation of skills and abilities in the practical application of these theoretical provisions.

Practical classes should be aimed at consolidating and deepening the knowledge acquired by students in lectures and group classes, as well as during independent work, and developing their skills in solving practical problems in their speciality.

During the organisation of independent work.

Independent work should be carried out with the aim of working out and mastering the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for the next classes and control measures; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge among students.

Independent work should be provided with educational literature, study guides, assignments and methodological recommendations. All teaching and learning materials should have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Material and technical support.

Classes should be held in specialised classrooms, which should be equipped with personal electronic computers at the rate of one workstation per two students and the training ground of the educational process support centre. It is mandatory to use technical training aids during the training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".
2. Logistics Force Doctrine. VKP 4-32(41).01.
3. Doctrine of the Logistics Forces Employment. VKP 4-32(03).01.
4. Joint Logistics Doctrine SP 4-00(30)03.01.
5. Doctrine of Logistics Support of the Land Forces of the Armed Forces of Ukraine VKP 4-00(11).01.
6. Doctrine on Provision of Logistics, Works and Services VKP 4-179(03).01.

7. Doctrine on the organisation of movements and transportations in the Armed Forces of Ukraine RMU 4-00(03.01).
8. Combat Statute Logistics of the Land Forces of the AFU (tactical level) BP 4-32(11).01.
9. The AFU Code of Conduct for Logistics Operations (tactical level), BP 4-146(11).01.
10. Combat manual of the troop deployment operation (tactical level) BP 4-147(11).01.
11. Instruction on Combat Training of the Logistics Forces of the Armed Forces of Ukraine VKPD 7-00(41).01.
12. Instruction on the Organisation of Tactical (Command and Staff) Exercises in the Armed Forces of Ukraine (Brigade (Regiment), Battalion, Company and their levels) VKDP 7-00(174)03.01. Kyiv GUP GS.
13. Instruction for a separate repair and restoration regiment VKDP 4-99(55).01
14. Basic Provisions for Logistics Support of the Armed Forces of Ukraine: approved by the Order of the Ministry of Defence of Ukraine of 11.10.2016, no. 522.
15. Regulations on military transportations by rail, sea, river and air: enacted by the Order of the Ministry of Defence of Ukraine of 05.09.2013 No. 595.
16. Procedure for the execution of operational (combat) documents: approved by the Order of the General Staff of the Armed Forces of Ukraine of 25.04.2020 No. 140.
17. Analysis of technical support for the actions of units (units) during the anti-terrorist operation. Kyiv: Arming the Armed Forces of Ukraine, 2014.
18. Norms for the accumulation, maintenance and echeloning of fixed stocks of missiles and ammunition in the Armed Forces of Ukraine in peacetime: approved by the Order of the NGSh-GK of the Armed Forces of Ukraine of 15.07.2008.
19. Norms of irrecoverable losses, withdrawal for repair of weapons and military equipment, and expenditure of other material resources in the operations of the Armed Forces of Ukraine: approved by the Order of the NGS - SC of the AFU of 26.01.2016.
20. Military reference book "Classes of logistics supply to the armed forces of NATO member states" VDV 01.300.001-2016 (01).
21. Collection of combat kits and norms of military stocks of missiles and ammunition in the Armed Forces of Ukraine: approved by the order of the CSR of the Armed Forces of Ukraine of 27.05.2003.
22. Demianchuk B.O., Malyshkin O.V. Fundamentals of technical support. Substantiation of decisions: a textbook. Odesa: VA, 2013. 250 c.

23. Demianchuk B.O., Holovan V.G., Honcharuk A.A., Nikul S.O., Malyshkin O.V. Fundamentals of technical support. Actions of the missile and artillery service: a textbook. Odesa: VA, 2014. 280 c.
24. Planning of logistics support for military units (subdivisions) according to NATO standard operating procedures. Kyiv. NOU.
25. Shumkov I., Rudynskyi V., Pikus D., Bondarenko A. Troop management procedure (TLP). Training manual Odesa. VA. 97c.
26. Dachkovskyi V.O., Ovcharenko I.V., Yaroshenko O.V. Fundamentals of evacuation of weapons and military equipment: a textbook. Kyiv: Ivan Cherniakhovskyi National University, 2017. 180 c.
27. Application of units and military units of technical support. PART I: Technical support units: textbook / Ovcharenko I.V. and others; edited by Kopashynskyi S.A. Kyiv: Ivan Cherniakhovskyi National University, 2017. 136 c.
28. Application of units and military units of technical support. PART II: Repair and restoration military unit: textbook / Ovcharenko I.V. and others; edited by Kopashynskyi S.A. Kyiv: Ivan Chernyakhovsky National University, 2018. 80 c.

Information resources.

1. Website of the Military Academy (Odesa). www.vaodessa.org.ua.
2. Electronic library of the Military Academy (Odesa) (internal network). <http://192.168.1.254/>.
3. Electronic library of the Department of Missile and Artillery Armament (internal network of the Military Academy (Odesa)). <http://192.168.1.254/index.php/kafedra-rao>.
4. Website of the Ministry of Defence of Ukraine. <http://www.mil.gov.ua/>.

Topic titles and distribution of study time by types of academic activities

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
		38	24	14	Topic 1: Logistics support of the Armed Forces of Ukraine
1.	Lecture	2	2		Lesson 1: Introduction. 1. Purpose and objectives of the discipline. The role and place of the discipline in the system of training of an arms logistician. 2. General provisions of logistics support of the Armed Forces of Ukraine
2.	Group session	2	2		Lesson 2: Fundamentals of logistics support. 1. The essence and content of logistics support for troops (forces). 2. Command of the Logistics Forces. 3. Main Logistics Directorate
3.	Group session	4	2	2	Lesson 3: Functions of logistics support. 1. Guidelines for the organisation of logistics support. 2. Functions of logistics support. Independent work 1. Doctrines of logistics support. 2. Combat regulations of logistics support
4.	Group session	4	2	2	Lesson 4. Logistical support of troops' actions. 1. The system of logistics support of the Armed Forces of Ukraine. 2. Types of logistics support of the Armed Forces of Ukraine. Independent work 1. The Objectives and Principles of Employing Logistic Forces. 2. Tasks of logistics forces during their application. 3. The order of application of logistics forces

5.	Group session	4	2	2	<p>Lesson 5. The system of providing material and technical means, works and services.</p> <p>1. System of provision of material and technical means. 2. Distribution of tasks with the provision of material and technical means, works and services.</p> <p>Independent work</p> <p>1. Peculiarities of providing material and technical means, works, and services during different combat types</p>
6.	Group session	4	2	2	<p>Lesson 6. The system of technical support of troops' actions.</p> <p>1. General information about the system of support for troops. 2. The concept of the system of technical support of troops.</p> <p>Independent work</p> <p>1. Characteristics of the tasks of preparing to support combat operations. 2. Planning of technical support for combat operations. 3. Organisation of technical support of combat operations</p>
7.	Group session	4	2	2	<p>Lesson 7. Support services in the system of technical support of military operations.</p> <p>1. The role, place of support services in the system of technical support of military operations. 2. Calculation and supply units.</p> <p>Independent work</p> <p>1. Structures of support services in the system of technical support of troops. 2. Tasks of support services in the system of technical support of military actions</p>
8.	Group session	4	2		<p>Lesson 8. Standards of accumulation, maintenance and echeloning of missiles and ammunition.</p> <p>1. Material resources and their stocks. 2. Norms of accumulation and maintenance of missiles and ammunition. 3. Echeloning of missiles and ammunition</p>
9.	Group session	4	2	2	<p>Lesson 9. Provision of troops with weapons and military equipment, missiles and ammunition, military-technical property.</p> <p>1. The system of supplying troops with armament and military equipment (AME), missiles and ammunition (M&A), military technical property (MTP). 2. The procedure for manning troops with weapons, missiles and ammunition.</p> <p>Independent work</p> <p>1. Planning the provision of troops with weapons, supplies and equipment. Initial data for planning. 2. The procedure for requisitioning weapons, equipment, and supplies (procedure for submitting a request)</p>
10.	Practical session	6	4	2	<p>Lesson 10. Manning of the troops with weapons, military equipment, missiles and ammunition, and military technical property.</p>

					<ol style="list-style-type: none"> 1. Procedure for manning troops with weapons and military equipment, small arms and ammunition. 2. Procedure for manning the troops with missiles and ammunition. <p>Independent work</p> <ol style="list-style-type: none"> 1. Doctrines of logistics support. 2. Organisation of logistics support of troops
11.	Seminar	2	2		<p>Lesson 11: Fundamentals of logistic support for troops (forces).</p> <ol style="list-style-type: none"> 1. The essence and content of logistics support of troops (forces). 2. The system of providing material and technical means. 3. The system of technical support of troops' actions
		56	38	18	Topic 2. Military maintenance and repair units.
12.	Lecture	4	2	2	<p>Lesson 1: Military repair units (subunits).</p> <ol style="list-style-type: none"> 1. Repair platoon, company of rocket and artillery armament (RAA). Purpose, tasks, capabilities and organisational structure. 2. Repair and recovery battalion. Purpose, tasks, capabilities and organisational structure. 3. Independent repair and recovery regiment. Purpose, tasks, capabilities and organisational structure. <p>Independent work</p> <ol style="list-style-type: none"> 1. Logistics battalion. Purpose, tasks, organisational and staffing structure. 2. Materiel support battalion. Purpose, tasks, organisational and staffing structure
13.	Group session	4	2	2	<p>Lesson 2. Mobile means of maintenance and repair.</p> <ol style="list-style-type: none"> 1. Purpose and composition of field repair workshops MRS-AR, MRM-M1, MRS-OR, TA-5(6), ADB-309, ESB-4BC. 2. Purpose and composition of field repair workshops OE, OP, N-1L. 3. Purpose of test and inspection vehicles. <p>Independent work</p> <ol style="list-style-type: none"> 1. Purpose and composition of the MTO-B workshop. 2. Purpose and composition of the MRTS workshop.
14.	Practical session	6	6		<p>Lesson 3. Operation of maintenance and repair equipment.</p> <ol style="list-style-type: none"> 1. Preparation and operation of the winch and crane boom. 2. Preparation and operation of the workshop from the generator set. 3. Preparation and operation of the workshop from an external power source. 4. The procedure for preparing and checking the workshop for use.
15.	Group session	4	2	2	Lesson 4. Symbols used in logistics documents.

					<p>1. General requirements for symbols. 2. Symbols in operational documents for logistics support. Independent work 1. Order of the General Staff of the Armed Forces of Ukraine dated 11.09.2020 No. 140.</p>
16.	Group session	4	2	2	<p>Lesson 5. Temporary technical support bodies. 1. Temporary technical support bodies. Concept, classification. 2. Composition, tasks and symbols of temporary technical support bodies. Independent work 1. Features of the work of temporary technical support bodies. 2. Practical work of temporary technical support bodies</p>
17.	Group session	4	2	2	<p>Lesson 6. Organisation of evacuation of weapons and military equipment. 1. Basic concepts of evacuation of weapons and military equipment. 2. Purpose, specifications of evacuation vehicles. Independent work 1. Features of evacuation of different types of weapons and military equipment. 2. Evacuation of weapons and military equipment in difficult conditions</p>
18.	Group session	2	2		<p>Lesson 7. Tasks of technical support units in combat conditions. 1. Primary tasks of technical support carried out by repair units in combat conditions. 2. Organisation of maintenance and restoration of weapons and military equipment. 3. The procedure for the transfer of weapons and military equipment that are not covered by repair in a military unit. 4. The procedure for handing over the repair fund</p>
19.	Group session	2	2		<p>Lesson 8. Protection, security and defence of repair units and their management in combat conditions. 1. Organisation of protection and special treatment of personnel, weapons and military equipment of repair units. 2. Protection, defence, engineering arrangement and camouflage of the area of deployment of repair units</p>
20.	Practical session	8	4	4	<p>Lesson 9. Developing a plan for the protection and defence of repair units. 1. Preparation of the deployment scheme for the assembly point of damaged vehicles. 2. Development of a security and defence plan for the protection and defence of the vehicle maintenance</p>

					unit. 3. Management of the repair unit in combat conditions. Independent work 1. Refinement of the scheme of the assembly point of damaged vehicles. 2. Refinement of the plan for the assembly point of damaged vehicles.
21.	Practical session	6	6		Lesson 10. Deployment of the assembly point of damaged vehicles elements. 1. Organisation and execution of the occupation of the area of the assembly point for damaged vehicles. 2. Deployment of the assembly point for damaged vehicles elements in the designated area. 3. Disassembly of the assembly point for damaged vehicles elements
22.	Group session	6	2	4	Lesson 11: Developing technical documentation. 1. Procedure for completing passports (forms). 2. Preparation of repair report documents. Independent work 1. Military repair units of the formation. 2. Duties of the repair unit commander during combat operations. 3. Standard symbols for logistical support.
23.	Seminar	4	4		Lesson 12. Military repair units. 1. Organisational and staffing structure of technical and logistical support units. 2. Duties of the repair unit commander in different types of combat
Control measures		2	2		Graded credit
		24	16	8	Topic 3. Duties of a repair unit commander, NATO military decision-making.
24.	Lecture	2	2		Lesson 1: Military decision-making process in NATO forces. 1. Troops leading procedures (TLP). General provisions of TLP. 2. Receiving a task (Step 1). 3. Giving a preliminary WARNO order (Step 2)
25.	Group session	4	2	2	Lesson 2: Commander's procedure for unit management. 1. Development of a preliminary action plan (Step 3). 2. Starting the movement (Step 4). Independent work 1. Detailed analysis of the METT-TC mission (3a).

					2. Risk assessment and elaboration of key points (3c). 3. Development and selection of a course of action (3b, 3d)
26.	Group session	4	2	2	Lesson 3: Commander's procedure for unit management. 1. Conducting reconnaissance (Step 5). 2. Completion of the plan (Step 6). 3. Issuing the ORPOD battle order (Step 7). 4. Control check (Step 8). Independent work 1. Types and methods of orders execution. 2. Pre-combat checks and inspections
27.	Practical session	8	4	4	Lesson 4. Developing TLP part 1. 1. Issuing an order. 2. Performing 1, 2, 3 steps of the TLP. Independent work 1. Refinement of 1,2,3 steps of the TLP. 2. Refinement of the manoeuvre scheme.
28.	Practical session	6	6		Lesson 5. Developing TLP part 2. 1. Performing 4, 5, 6, 7 steps of the TLP. 2. Control, verification, improvement
		32	22	10	Topic 4. Organisation of technical support of a military unit during the preparation and entry of combat (movement) of troops
29.	Lecture	4	2	2	Lesson 1: Organisation of work of the commander of a repair unit in preparation for combat operations. 1. The sequence of work of the commander of the repair unit in preparation for combat operations. 2. Preparation of combat, planning and accounting documents. Independent work 1. Understanding of the task by the commander of the repair unit. 2. Giving preliminary orders and calculating time. 3. Assess the situation and make a decision
30.	Group session	2	2		Lesson 2. General provisions of troop transport.

					<ul style="list-style-type: none"> 1. Basic requirements for transporting troops. 2. Calculations of transportation and loading of troops
31.	Group session	4	2	2	<p>Lesson 3: Organisation of technical support during the movement of troops.</p> <ul style="list-style-type: none"> 1. Features of technical support in preparation for movement. 2. Features of technical support during the movement on its own. 3. Features of technical support during the combined movement of troops. <p>Independent work</p> <ul style="list-style-type: none"> 1. Actions of forces and means of technical support in the preparation and movement of troops
32.	Group session	2	2		<p>Lesson 4. The work of the commander of a repair unit in preparation for and during defence.</p> <ul style="list-style-type: none"> 1. Content of technical support measures in preparation for defence. 2. The sequence of work of the commander of the repair unit in preparation for and during the defence
33.	Group session	4	2	2	<p>Lesson 5. Work of the commander of a repair unit in preparation for and during the offensive.</p> <ul style="list-style-type: none"> 1. Content of technical support measures in preparation for the offensive. 2. Actions of forces and means of technical support during the offensive. <p>Independent work</p> <ul style="list-style-type: none"> 1. Features of technical support of the unit in the course of defence in the city. 2. Features of technical support of the unit during an offensive battle in the city
34.	Group session	2	2		<p>Lesson 6. Peculiarities of employing repair units during operations against illegal armed groups (IAG) (in ATO/JFO).</p> <ul style="list-style-type: none"> 1. Features of the use of repair bodies in various types of combat (on the march). 2. Features of the use of repair bodies in the fight against IAGs (in ATO/JFO).
35.	Seminar	8	4	4	<p>Lesson 7. Employment of repair units in different types of combat (on the march), in the fight against illegal armed groups (IAG) (in ATO/JFO).</p> <ul style="list-style-type: none"> 1. Organisation of technical support during the movement of troops. 2. Duties of the repair unit commander during preparation for and conduct of defensive operations. 3. Duties of the repair unit commander during preparation for and conduct of offensive operations. 4. Employment of repair units during operations against illegal armed groups (IAG) (in ATO/JFO). <p>Independent work</p> <ul style="list-style-type: none"> 1. Preparation for the exam.
Control measures		6	6		Examination
Total for the discipline		150	100	50	

Organisation of supply and maintenance of missiles and ammunition in military units

General purpose of the educational programme component.

As a result of studying the discipline, the student should

know:

the main provisions of the guiding documents on accounting, write-off, categorisation and storage of rocket and artillery weapons;

the procedure for accounting and reporting, write-off of munitions, containers and spare parts for them;

procedure for the operation and storage of missiles, ammunition and spare parts;

the procedure for organising the safe operation of munitions.

be able to:

to organise high-quality accounting and reporting of munitions of the relevant nomenclature of weapons;

organise the quality storage and delivery of missiles and ammunition;

organise quality categorisation and write-off of ammunition, missiles and spare parts for them;

plan, organise and control the technical inspection and routine maintenance of munitions.

Organisational and methodological instructions.

The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and learning). It provides a scientific and pedagogical description of the forms and methods of teaching, indicates the most appropriate combinations to achieve a certain level of learning, and determines the conditions for their most effective use.

To achieve the main learning objective, the programme provides for the following forms of learning:

frontal form of learning, when all students perform the same task at the same time under the supervision of a teacher;

group form of training, when students are combined into groups (departments) depending on the staffing structure of the unit, which work in parallel;

individual form of training, when students complete tasks sequentially, one by one.

In this case, depending on the need to achieve levels of knowledge or skills, the teacher should use the following methods verbal and visual;

training;

situational and cognitive.

The verbal-visual method is used when the instructor systematically and consistently delivers the training material and demonstrates the objects under study in order to provide the trainees with new knowledge and to develop the appropriate conceptual understanding.

The training (reproductive) method consists in performing a sequence of integrated actions in accordance with the algorithm specified by the instructor (a pre-established procedure) in order to develop the necessary skills and to ensure the cohesion of military organisational structures.

The situational-cognitive method consists in conducting the review and discussion of actual (or probable) actions, familiarising trainees with the experience of command and control of troops (forces) in military conflicts, and developing information and analytical skills.

The above-mentioned methods provide the trainees with knowledge, skills, and abilities; however, to develop their creative capabilities, the instructor should employ problem-based learning methods.

Problem-based teaching is when the class leader poses a problem to the students, solves it himself, but at the same time shows the ways of solving it, reveals the course of his thought. The immediate result of problem-based teaching should be that the student learns the method and logic of solving a particular problem, but not yet the ability to apply it independently. This method teaches students how to search for knowledge and helps them develop creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to solving problems on their own by first teaching them how to perform certain elements of the solution. It is used during group exercises when the method of finding the optimal solution is determined by the class leader, but the solution is found by the student.

Problem-based methods provide a deep assimilation of knowledge at the level of its creative application, mastery of creative thinking methods, and practical experience.

During group sessions.

A group lesson is a type of training session during which the teacher presents new educational material in a verbal and visual way, controls the students' learning of this material by questioning and helps to consolidate it.

Group classes are held for the purpose of detailed study by students of the issues and problems discussed in lectures and detailed consideration of topical issues of the educational material. The main teaching methods used are explanation with demonstration and discussion. Technical means of information transmission, tables, diagrams, slides, and posters should be used to ensure visualisation during the classes.

During practical sessions.

A practical lesson is a type of training session during which the teacher organises the mastery of the theoretical provisions of the topic through individual performance of specially designed tasks and promotes the formation of skills and abilities to apply these theoretical provisions in practice.

Practical exercises should be aimed at consolidating and deepening the knowledge gained by students in group classes and during independent work, and at developing skills in solving practical problems of everyday military activities.

Material and technical support.

Classes should be held in specialised classrooms, which should be equipped with personal computers at the rate of one workstation per two students and at the training centre's training ground. It is mandatory to use technical training aids during the training sessions.

Information and methodological support:

1. "Regulations on the military (ship) economy of the Armed Forces of Ukraine" approved by the Order of the Minister of Defence of Ukraine of 16.07.1997 No. 300.
2. "Instructions on Categorisation of Missile and Artillery Weapons" approved by the Order of the Minister of Defence of Ukraine of 04.01.2019 No. 4.
3. "Instructions on the organisation of repair of rocket and artillery weapons in peacetime" approved by the Order of the Ministry of Defence of Ukraine of 16.08.2012 No. 545.
4. "Instructions on Accounting for Military Property in the Armed Forces of Ukraine" were put into effect by the Order of the Minister of Defence of Ukraine of 17.08.17 No. 440.
5. "Instruction on the Organisation of Accounting, Storage and Issuance of Small Arms and Ammunition in the Armed Forces of Ukraine" was approved by the Order of the Minister of Defence of Ukraine of 29.06.2005, No. 359.
6. "Instructions on the peculiarities of conducting an inventory of small arms, missiles and ammunition in the Armed Forces of Ukraine" was put into effect by the Order of the Minister of Defence of Ukraine of 10.01.2017 No. 16.
7. The "Methodology for Determining the Residual Value of Property of the Armed Forces of Ukraine and Other Military Formations" was enacted by the Resolution of the Cabinet of Ministers of Ukraine of 29.05.1998 No. 759.
8. "The Procedure for Write-Off of Military Property in the Armed Forces of Ukraine and the State Special Transport Service" was enacted by the Order of the Minister of Defence of Ukraine of 29.03.2021 No. 81.

9. Law of Ukraine "On the Statute of the Internal Service of the Armed Forces of Ukraine" was enacted on 24.03.1999, No. 548-XIV.

10. Law of Ukraine "On the Legal Regime of Property in the Armed Forces of Ukraine" was enacted on 21.09.1999, No. 1075-XIV.

Information resources:

1. Website of the Military Academy (Odesa). www.vaodessa.org.ua.
2. Electronic library of the Military Academy (Odesa) (internal network). <http://192.168.1.254/>.
3. Electronic library of the Department of Missile and Artillery Armament (internal network of the Military Academy (Odesa)). <http://192.168.1.254/index.php/kafedra-rao>.
4. Website of the Ministry of Defence of Ukraine. <http://www.mil.gov.ua/>.

Topic titles and distribution of study time by types of academic activities

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
		32	20	12	Topic 1: General provisions for the organisation of missile and artillery weapons operation.
1.	Lecture	2	2		Lesson 1: Fundamentals of logistics support. 1. The purpose and objectives of the discipline. Its role and place in the system of training of a rocket and artillery armament (RAA) specialist. 2. General provisions of logistics support of the Armed Forces of Ukraine and the organisational and staffing structure of the armament support services of the military unit. 3. The main key documents that regulate the activities of support services
2.	Lecture	2	2		Lesson 2: Fundamentals of the theory of rocket and artillery weapons operation. 1. Basic concepts and definitions of rocket and artillery weapons. 2. Basic concepts and definitions of rocket and artillery weapons operation. 3. Basic provisions for the organisation of the operation of rocket and artillery weapons
3.	Group session	4	2	2	Lesson 3: Commissioning of rocket and artillery weapons. 1. Procedure for receiving and transferring radioactive waste. 2. Commissioning of rocket and artillery weapons. 3. Admission of personnel to the operation of radioactive waste. Independent work 1. Procedure for working out the list of personnel admission to work in radioactive waste storage facilities
4.	Group session	2	2		Lesson 4. Fundamentals of the theory of maintenance and repair of equipment. 1. Purpose, tasks, types and methods of maintenance of weapons and equipment. 2. Purpose, tasks, types and methods of repair of weapons and equipment

5.	Group session	2	2		<p>Lesson 5. Means of operation of radioactive waste.</p> <ol style="list-style-type: none"> 1. General characteristics of radioactive waste management facilities. 2. Purpose and classification of spare parts and accessories. 3. Operational documentation and the procedure for its maintenance
6.	Practical session	5	2	3	<p>Lesson 6. The procedure for maintaining operational documentation.</p> <ol style="list-style-type: none"> 1. The procedure for filling out forms for weapons. 2. The procedure for filling out passports for military equipment. <p>Independent work</p> <ol style="list-style-type: none"> 1. Transportation of radioactive waste by road. 2. Transport of radioactive waste by rail. 3. Transport of radioactive waste by sea (river) and air transport
7.	Group session	5	2	3	<p>Lesson 7. Safety measures during operation of radioactive waste in the military.</p> <ol style="list-style-type: none"> 1. Design and operational measures to ensure safe operation of weapons. 2. Safety measures when handling weapons during their use and during maintenance. <p>Independent work</p> <ol style="list-style-type: none"> 1. Lightning protection of storage areas. 2. Requirements for the installation and operation of lightning protection
8.	Group session	4	2	2	<p>Lesson 8. Organisation of safe operation of technical means.</p> <ol style="list-style-type: none"> 1. Organisation of safe operation of boiler supervision facilities. 2. Organisation of safe operation of electrical installations, protective equipment. 3. Organisation of safe operation of high and low pressure hoses and hoses. <p>Independent work</p> <ol style="list-style-type: none"> 1. Safety measures for handling ammunition when working in storage facilities and during loading and unloading operations. 2. Safety measures for handling ammunition at firing positions. 3: Procedure for handling dangerous ammunition
9.	Group session	4	2	2	<p>Lesson 9. Organisation of fire safety in a military unit.</p> <ol style="list-style-type: none"> 1. General provisions on the organisation of fire safety. 2. Special fire safety requirements for arsenals, bases and storage facilities for missiles, artillery and engineering ammunition, aircraft, explosives

					3. Special fire safety requirements for parks of weapons and military equipment. Independent work 1. Sources of contaminated waste generation. 2. Requirements for environmental protection during the operation of weapons and equipment
Control measures		2	2		Graded credit
		9	6	3	Topic 2. Organisation of storage of weapons and ammunition in military units
10.	Group session	5	2	3	Lesson 1: Organisation of ammunition and hand grenades storage in military units. 1. Places of storage of ammunition. 2. Requirements for opening (closing) warehouses and small arms repair facilities. Independent work 1. General Provisions of the Instruction on the Organisation of Accounting, Storage and Issuance of Small Arms and Ammunition in the Armed Forces of Ukraine, Order of the Ministry of Defence of Ukraine dated 29 June 2005 No. 359
11.	Group session	2	2		Lesson 2: Peculiarities of organising the acceptance and issue of ammunition and hand grenades at arsenals, bases and warehouses. 1. Issuance of ammunition and hand grenades. 2. Registration of the acceptance of ammunition and hand grenades
12.	Practical session	2	2		Lesson 3: Peculiarities of organising the acceptance and issue of ammunition and hand grenades in a military unit. 1. The procedure for issuing ammunition and hand grenades. 2. Registration of acceptance of ammunition and hand grenades
		7	4	3	Topic 3: Organisation of radioactive waste storage during combat operations.
13.	Group session	5	2	3	Lesson 1: Organisation of storage of missiles and ammunition during combat operations. 1. General provisions for the organisation of storage of missiles and ammunition during combat operations. 2 Location of the artillery storage depot for radioactive waste. 3. Procedure for storing missiles and ammunition at company ammunition points during combat operations. Independent work

					1. Peculiarities of accounting and storage of small arms and ammunition by national personnel
14.	Group session	2	2		Lesson 2. Storage of small arms during combat operations. 1. Features of storage of small arms during hostilities. 2. Features of small arms storage at company ammunition points during combat operations
		16	10	6	Topic 4. Organization of categorization of rocket and artillery weapons
15.	Group session	2	2		Lesson 1: General provisions on the organization of categorization of rocket and artillery weapons. 1. General information of categorization of rocket and artillery weapons. 2. Categorisation of small arms
16.	Group session	5	2	3	Lesson 2. General provisions on the organisation of categorisation of missiles, ammunition and spare parts for them. 1. Categorisation of ammunition. 2. Categorisation of missiles and spare parts for them. Independent work 1. General provisions of the Instruction on the procedure for categorising rocket and artillery Order of the Ministry of Defence of Ukraine dated 04.01.2019 No. 4
17.	Practical session	2	2		Lesson 3: Transfer of missiles and ammunition from one category to another. 1. Preparation of a technical condition report for the transfer of missiles from one category to another. 2. Preparation of a quality (technical condition) report for the transfer of ammunition from one category to another
18.	Group session	5	2	3	Lesson 4. Procedure for transfer and registration of rocket and artillery weapons from one category to another. 1. The procedure for transferring and registering small arms from one category to another. 2. The procedure for transferring and registering military-technical property from one category to another. Independent work 1. Categorisation of equipment for the repair and operation of rocket and artillery weapons. 2. Categorisation of alkaline batteries (accumulators)
19.	Practical session	2	2		Lesson 5. Transfer of rocket and artillery weapons from one category to another.

					<p>1. Preparation a technical condition report for the transfer of small arms from one category to another.</p> <p>2. Transfer of military-technical property of the rocket and artillery weapons nomenclature from one category to another</p>
		38	26	12	Topic 5. Accounting for rocket and artillery weapons in units of a military unit
20.	Group session	2	2		<p>Lesson 1: Organisation of military property accounting in units of a military unit.</p> <p>1. Organisation of accounting of rocket and artillery weapons in the units of a military unit.</p> <p>2. Features of the accounting organization for rocket and artillery weapons in the repair units of the military unit</p>
21.	Group session	5	2	3	<p>Lesson 2. General provisions on the organisation of military property accounting.</p> <p>1. General provisions for the organisation of rocket and artillery weapons accounting in a military unit.</p> <p>2. Types of administrative accounting documents.</p> <p>3. Types of primary accounting documents.</p> <p>4. Types of accounting registers (books and accounting cards).</p> <p>Independent work</p> <p>1. General provisions of the Instruction on Accounting for Military Property in the Armed Forces of Ukraine (Order of the Ministry of Defence of Ukraine dated 17.08.2017 No. 440)</p>
22.	Group session	5	2	3	<p>Lesson 3: Procedures for the completion of primary accounting documents maintained in sub-units of a military unit.</p> <p>1. Procedures for the completion of an issue (or return) voucher for military property within a military unit.</p> <p>2. Procedures for the completion of a hand-over/take-over certificate for military property.</p> <p>Independent work</p> <p>1. Types of auxiliary accounting documents.</p> <p>2. Procedures for the preparation of supporting accounting documents</p>
23.	Group session	2	2		<p>Lesson 4. Procedures for the completion of accounting documents maintained in sub-units of a military unit.</p> <p>1. The procedure for registration of accounting registers (books and cards) maintained in sub-units of a military unit.</p>

					2. Procedures for the completion of directive and auxiliary accounting documents maintained in sub-units of a military unit
24.	Practical session	7	4	3	<p>Lesson 5. Preparation of primary accounting documents maintained in sub-units of a military unit.</p> <p>1. Completion of an issue/return voucher for military property within a military unit.</p> <p>2. Preparation of an act of acceptance and transfer of military property.</p> <p>Independent work</p> <p>1. Peculiarities of accounting for rocket and rocket-artillery weapons, equipment and property. Section 15 of the Order of the Ministry of Defence of Ukraine dated 17.08.17 No. 440</p>
25.	Practical session	4	4		<p>Lesson 6. Preparation of accounting documents maintained in sub-units of a military unit.</p> <p>1. Completion of the register and movement log of accounting documents.</p> <p>2. Completion of the ledger for the availability and movement of military property (warehouse, sub-unit).</p> <p>3. Completion of the inventory log by serial numbers and assignment of weapons, military equipment, and other military property</p>
26.	Group session	2	2		<p>Lesson 7. Organisation of missile and ammunition accounting during exercises and practical firing in a military units.</p> <p>1. Accounting for missiles and ammunition during exercises and live-fire drills in sub-units of a military unit.</p> <p>2. Organization of missile and ammunition accounting during training exercises and live-fire drills in sub-units of a military unit</p>
27.	Practical session	7	4	3	<p>Lesson 8. Preparation of primary, directive, and supporting accounting documents maintained in sub-units of a military unit.</p> <p>1. Preparation of a consignment note for the transportation of military property.</p> <p>2. Preparation of an ammunition loading certificate for combat vehicles.</p> <p>3. Preparation of a vehicle dispatch sheet.</p> <p>Independent work</p> <p>1. Accounting procedures for property received as international assistance, from volunteer organizations, or as charitable and humanitarian aid. Section 12 of the order of the Ministry of Defence of Ukraine dated 17.08.17 No. 440</p>

28.	Practical session	4	4		<p>Lesson 9. Preparation of primary, directive, and supporting accounting documents maintained in sub-units of a military unit.</p> <p>1. Preparation of an ammunition issue and receipt register at the military unit depot.</p> <p>2. Preparation of an ammunition issue and receipt register at the military unit's combat supply point</p>
		6	4	2	Topic 6: Organisation of military property accounting during combat operations, participation in anti-terrorist operations, international peacekeeping and security operations
29.	Group session	4	2	2	<p>Lesson 1: Accounting for military property in combat-deploying units.</p> <p>1. The procedure and features of accounting for military property in combat-deploying units.</p> <p>2. Specifics of military property accounting at armed forces depots in combat operations.</p> <p>Independent work</p> <p>1. Specifics of military property accounting in support services of command authorities of combat-deployed forces</p>
30.	Group session	2	2		<p>Lesson 2: Specifics of accounting for small arms, ammunition and hand grenades in units during combat operations.</p> <p>1. The procedure for echeloning and accumulation of missiles and ammunition stocks in units during combat operations.</p> <p>2. Organisation of accounting for small arms and ammunition in the brigade at company and platoon and platoon ammunition supply points</p>
		16	10	6	Topic 7. Organization of disposal of rocket and artillery weapons
31.	Group session	5	2	3	<p>Lesson 1: Organisation of disposal of material assets in the Armed Forces of Ukraine.</p> <p>1. General provisions on the organisation of disposal of material assets in the Armed Forces of Ukraine.</p> <p>2. Organisation of disposal of material assets in the Armed Forces of Ukraine.</p> <p>Independent work</p> <p>1. General provisions on the procedure for disposal material and cash assets in the Armed Forces of Ukraine (Order of the Ministry of Defence of Ukraine dated 29.03.2021 No. 81)</p>
32.	Group session	2	2		<p>Lesson 2: Procedures for deregistration of military property based on disposal certificates.</p> <p>1. Procedures for deregistration of military property based on condition assessment certificates.</p> <p>2. Procedures for deregistration of military property based on disposal acts</p>

33.	Group session	2	2		<p>Lesson 3: The procedure for determining the residual value of property of the Armed Forces of Ukraine.</p> <p>1. The procedure for determining the residual value of property of the Armed Forces of Ukraine. 2. The procedure for assessing the residual value of military property</p>
34.	Practical session	5	2	3	<p>Lesson 4. Preparation of documents for deregistration of material assets based on condition assessment certificates.</p> <p>1. Preparation of documents for deregistration of weapons and military equipment based on condition assessment certificates. 2. Preparation of documents for deregistration of spare tools and accessories (STA) based on condition assessment certificates.</p> <p>Independent work</p> <p>1. Legislative and regulatory framework governing the deregistration of military property based on inspector certificates</p>
35.	Practical session	2	2		<p>Lesson 5. Preparation of Documents for Deregistration of Munitions and Their Packaging Based on Condition Assessment Certificates.</p> <p>1. Preparation of documents for deregistration of munitions based on condition assessment certificates. 2. Preparation of documents for deregistration of munitions packaging based on condition assessment certificates</p>
		6	6		Topic 8: Organization and procedures for inventorying material assets.
36.	Group session	2	2		<p>Lesson 1: Inventory of material assets.</p> <p>1. Procedures for inventorying material assets of rocket and artillery weapons. 2. Procedures for inventorying small arms. 3. Procedures for Inventorying Munitions</p>
37.	Practical session	4	4		<p>Lesson 2: Preparation of inventory documents for material assets of rocket and artillery weapons.</p> <p>1. Preparation of inventory report for small arms inventory. 2. Preparation of inventory report for ammunition inventory</p>
		20	14	6	Topic 9: Organization of handover procedures by personnel of the rocket and artillery weapons service

38.	Group session	2	2		<p>Lesson 1: Procedures for handover and assumption of files and positions by personnel responsible for military (naval) administration.</p> <p>1. General provisions on the handover and assumption of files and positions. 2. Receiving and handing over cases and positions by the unit commander. 3. Receiving and handing over affairs and position by the commander of the weapons repair platoon.</p> <p>Independent work</p> <p>1. General Provisions on Military (Naval) Administration of the Armed Forces of Ukraine Order of the Ministry of Defence of Ukraine dated 16.07.1997 No. 300. 2. The rights and responsibilities of military unit (ship) and formation officials related to the Military (Naval) Administration Management</p>
39.	Practical session	4	4		<p>Lesson 2. Preparation of handover documents by personnel assuming or relinquishing positions.</p> <p>1. Preparation of a position handover report by the commander of the maintenance unit. 2. Preparation of a statement on the availability and condition of material assets</p>
40.	Practical session	5	2	3	<p>Lesson 3: Preparation of handover documents for weapons and military equipment by officials.</p> <p>1. Preparation of a technical condition report during the handover of weapons and military equipment. 2. Preparation of a shortage/deficiency record card.</p> <p>Independent work</p> <p>1. Preparation for the exam</p>
Control measures		6	6		Examination
Total for the discipline		150	100	50	

Structure and operation of artillery instruments

General purpose of the educational programme component:

As a result of studying the discipline, the student should

know:

the main provisions of the guiding documents on the organisation of maintenance and repair of artillery instruments;
the procedure for keeping records and reporting, writing off material assets used during the operation of artillery devices;
the structure of optical and optoelectronic artillery devices and their preparation for practical tasks in professional activities;
the procedure for the operation and storage of artillery devices;
the procedure for organising and conducting maintenance of reconnaissance equipment;
physical phenomena and processes occurring in optical, optoelectrical devices, thermal imaging devices, electrical and electromechanical equipment;
content and methods of preparing samples of rocket and artillery weapons for intended use.

be able to:

organise high-quality accounting, storage, issuance and write-off of material assets of the relevant nomenclature;
plan, organise and control the restoration of artillery reconnaissance devices;
carry out maintenance of artillery devices;
be aware of current trends in the development of optical and optoelectronic reconnaissance equipment;
check artillery devices for operability, carry out alignment (adjustment) and verification of artillery reconnaissance devices;
use artillery devices only for their intended purpose and maintain them in good technical condition.

Organisational and methodological instructions.

The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and learning). It provides a scientific and pedagogical description of the forms and methods of teaching, indicates the most appropriate combinations of them to achieve a certain level of learning, determines the conditions for their most effective use.

To achieve the main learning objective, the programme provides for the following forms of learning:

frontal form of learning, when all students perform the same task at the same time under the supervision of a teacher;
group form of training, when students are combined into groups (departments) depending on the staffing structure of the unit, which work in parallel;

individual form of training, when students complete tasks sequentially, one by one.

In this case, depending on the need to achieve levels of knowledge or skills, the teacher should use the following methods:

verbal and visual;

training;

situational and cognitive.

The verbal-visual method is used when the instructor systematically and consistently delivers the training material and demonstrates the objects under study in order to provide the trainees with new knowledge and to develop the appropriate conceptual understanding.

The training (reproductive) method consists in performing a sequence of integrated actions in accordance with the algorithm specified by the instructor (a pre-established procedure) in order to develop the necessary skills and to ensure the cohesion of military organisational structures.

The situational-cognitive method consists in conducting the review and discussion of actual (or probable) actions, familiarising trainees with the experience of command and control of troops (forces) in military conflicts, and developing information and analytical skills.

The above-mentioned methods provide the trainees with knowledge, skills, and abilities; however, to develop their creative capabilities, the instructor should employ problem-based learning methods.

Problem-based teaching is when the class leader poses a problem to the students, solves it himself, but at the same time shows the ways of solving it, reveals the course of his thought. The immediate result of problem-based teaching should be that the student learns the method and logic of solving a particular problem, but not yet the ability to apply it independently. This method teaches students how to search for knowledge and helps them develop creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to solving problems on their own by first teaching them how to perform certain elements of the solution. It is used during group exercises when the method of finding the optimal solution is determined by the class leader, but the solution is found by the student.

Problem-based methods provide a deep assimilation of knowledge at the level of its creative application, mastery of creative thinking methods, and practical experience.

During lecture classes:

The lecture is the main type of training sessions designed to master the theoretical material of the topic.

The main purpose of the lecture is to systematise the basis of scientific knowledge and practical experience on the topic, the state and prospects of development of management science, theory and practice of management activities of a military leader, to focus on the most complex and nodal issues of the educational material. The lecture should have a problematic character, stimulate active cognitive activity of students, and contribute to the formation of their creative thinking. In order to enhance the cognitive activity of servicemen and to develop their creative thinking, technical teaching aids should be skilfully used during lectures in combination with active forms and methods of lecturing. Classes should be conducted using the method of oral presentation of educational material, with individual questions and educational elements worked out in the form of a dialogue between the teacher and the students and by asking them problematic questions.

During group sessions.

A group lesson is a type of training session during which the teacher presents new educational material in a verbal and visual way, controls the students' learning of this material by questioning and helps to consolidate it.

Group classes are held for the purpose of detailed study by students of the issues and problems discussed in lectures and detailed consideration of topical issues of the educational material. The main teaching methods used are explanation with demonstration and discussion. Technical means of information transmission, tables, diagrams, slides, and posters should be used to ensure visualisation during the classes.

During practical sessions.

A practical lesson is a type of training session during which the teacher organises the mastering of the theoretical provisions of the topic through the individual performance of specially designed tasks and promotes the formation of skills and abilities in the practical application of these theoretical provisions.

Practical classes should be aimed at consolidating and deepening the knowledge gained by students in lectures and group classes, as well as during independent work, and developing their skills in solving practical problems in their speciality.

When organising independent work.

Independent work should be carried out with the aim of working out and mastering the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for the next classes and control measures; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge among students.

Independent work should be provided with educational literature, study guides, assignments and methodological recommendations. All teaching and learning materials should have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Material and technical support.

Classes are to be held in specialised classrooms, which must be equipped with samples of rocket and artillery weapons. It is mandatory to use technical training aids during the training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".
2. The Constitution of Ukraine. The Basic Law. - Kyiv, 1996 (as amended) // Official Gazette of Ukraine of 01.10.2010.
3. White Paper of Ukraine 2020.
4. Order of the Minister of Defence of Ukraine No. 300 of 16.07.1997 "Regulations on Military Economy in the Armed Forces of Ukraine".
5. Order of the Minister of Defence of Ukraine No. 440 of 17.08.2017 "On Approval of the Instruction on Accounting for Military Property in the Armed Forces of Ukraine".
6. Order of the Minister of Defence of Ukraine No. 569 of 20.10.2015 "On Approval of the Instruction on Organisation of Accounting, Storage and Issuance of Small Arms and Ammunition in the Armed Forces of Ukraine" (as amended).
7. Order of the Minister of Defence of Ukraine No. 4 of 04.01.2019 "On Approval of the Instruction on Categorisation of Rocket and Artillery Weapons".
8. DSTU 2860-94. Reliability of equipment. Terms and definitions. 01.01.95 - K.: State Standard of Ukraine, 1995.
9. Dushkin Y.G., Maksimenko Y.A., Chkalov A.P., Galaktionov M.E.. Optical and optoelectronic means of reconnaissance. Odesa. VA-2020.
10. Kravchuk O.I., Levchenko A.O.. Fundamentals of the structure of optical and optoelectronic means of military and special intelligence. Study guide. Odesa. VA-2014.
11. K.V.Salukvadze, V.G.Staroselets, V.N.Chukhnin. Theoretical foundations of artillery weapons operation.
12. V.S. Kutsopale. Fundamentals of storage and restoration of weapons combat capability.
13. A.S.Abdulin, K.V.Salukvadze, V.M.Shakhmametiev. Maintenance and repair of artillery weapons.
14. Manual for the operation of rocket and artillery weapons. Part 1, 2.
15. Chizh I.G., "Theory of Optical Systems" Kyiv, Igor Sikorsky Kyiv Polytechnic Institute, 2022.

16. "Fundamentals of construction and design of artillery devices" Odesa, OISV, 1998.

Information resources

1. Website of the Military Academy (Odesa). www.vaodessa.org.ua.
2. Electronic library of the Military Academy (Odesa) (internal network). <http://192.168.1.254/>.
3. Electronic library of the Department of Missile and Artillery Armament (internal network of the Military Academy (Odesa)). <http://192.168.1.254/index.php/kafedra-rao>.
4. Website of the Ministry of Defence of Ukraine. <http://www.mil.gov.ua/>.

Topic titles and distribution of study time by types of academic activities

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
		34	22	12	Section 1. Physical principles and fundamentals of construction of artillery instruments
		16	12	4	Topic 1: Physical principles of construction of optical devices
1.	Lecture	2	2		Lesson 1: Introduction. 1. Subject of the discipline, its objectives, content and significance. Interrelation with other disciplines. 2. Classification of artillery devices, their staffing. 3. Entrance control
2.	Group session	3	2	1	Lesson 2: Basic concepts of optics. 1. The main sections of optics. 2. Basic concepts of geometric optics. 3. Basic laws of geometric optics. Independent work 1. Production of optical glass. 2. Properties of optical glass
3.	Group session	2	2		Lesson 3: Parts of optical devices. 1. Lenses. 2. Prisms
4.	Group session	3	2	1	Lesson 4. Details of optical devices. 1. Grids. 2. Light filters. Independent work 1. Production of mirrors. 2. Silvering and aluminising of mirrors

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
5.	Group session	2	2		Lesson 5. Enlightenment and bonding of optical parts. 1. Physical and chemical clarification. 2. Bonding of optical parts
6.	Group session	4	2	2	Lesson 6. Levels and scales. 1. Levels. 2. Scales. Independent work 1. Loss of light
		18	10	8	Topic 2. Fundamentals of construction of optical devices.
7.	Lecture	4	2	2	Lesson 1: Optical systems 1. Types of optical systems. 2. An ideal optical system and its purpose. Independent work 1. Spherical aberrations of optical systems. 2. Monochromatic aberrations of optical systems. 3. Chromatic aberrations of optical systems
8.	Group session	4	2	2	Lesson 2: Basic optical components. 1. The lens. 2. Rotating system. 3. The eyepiece. Independent work 1. Physiology of the eye. 2. Properties of the eye

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
9.	Group session	4	2	2	Lesson 3: Telescopic systems. 1. Types of telescopic systems and their characteristics. 2. Galileo's telescopic system. 3. Kepler's telescopic system. Independent work. 1. Physiology of stereoscopic vision. 2. Properties of stereoscopic vision
10.	Group session	4	2	2	Lesson 4. Optical characteristics of optical devices. 1. Basic optical characteristics of optical devices. Independent work 1. Preparation for modular control.
11.	Group session	2	2		Lesson 5. Methods of fixing optical parts. 1. Methods of fastening optical parts. 2. Modular control.
		56	42	14	Section 2. Structure and operation of optical reconnaissance and targeting devices
		12	8	4	Topic 3. Optical reconnaissance and surveillance devices
12.	Lecture	2	2		Lesson 1: Degree system and main directions used in artillery. 1. Degree system in artillery. 2. The main directions used in artillery
13.	Group session	4	2	2	Lesson 2: Binoculars. 1. Purpose, technical specifications, binoculars' completeness. 2. Structure and principle of operation. Independent work

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					1. Features of the structure of binoculars Bi-8. 2. The principle of operation of Bi-8
14.	Group session	4	2	2	Lesson 3: Periscopic artillery bassoon PAB-2AM. 1. Purpose, technical specifications, equipment of PAB-2AM. 2. Structure and principle of operation. 3. Optical scheme of PAB-2AM. Independent work 1. Operation with binoculars. 2. Operation with PAB-2AM
15.	Practical session	2	2		Lesson 4. Working with binoculars and PAB-2AM. 1. Operation with binoculars. 2. Operation with PAB-2AM.
		14	10	4	Topic 4. Optical sights for small arms and grenade launchers.
16.	Group session	2	2		Lesson 1: PSO-1 optical sight. 1. Purpose, technical specifications, completeness. 2. Structure and principle of operation. 3. Optical scheme
17.	Group session	2	2		Lesson 2: PGO-7 optical sight. 1. Purpose, technical specifications, completeness. 2. Structure and principle of operation. 3. Optical scheme
18.	Group session	4	2	2	Lesson 3: PAG-17 optical sight. 1. Purpose, technical specifications, completeness.

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					2. Structure and principle of operation. 3. Optical scheme. Independent work 1. Operation with PSO-1. 2. Operation with PSO-7. 3. Operation with PAG-17. 4. Preparation for graded credit
19.	Practical session	4	2	2	Lesson 4. Work with optical sights for small arms and grenade launchers. 1. Operation with the PSO-1. 2. Operation with the PSO-7. 3. Operation with PAG-17. Independent work 1. Preparation for graded credit
Control measures		2	2		Graded credit
		32	24	8	Topic 5. Sights for artillery guns and mortars
20.	Group session	2	2	2	Lesson 1: S71-40 mechanical sight. 1. Purpose, modifications and specifications of the S71-40. 2. Structure and principle of operation. Independent work 1. Checking the sights and the correctness of the level adjustment. 2. Determination of backlash in the angle of site mechanism. 3. Determination of backlash in the aiming angle mechanism
21.	Group session	4	2	2	Lesson 2: Gun panorama PG-1M, gun collimator K-1.

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					1. Purpose, technical specifications, configuration, structure, principle of operation and optical scheme of the PG-1M. 2. Purpose, specifications, configuration, structure, principle of operation and optical scheme of K-1. Independent work 1. Verification of the zero line of sight
22.	Group session	2	2		Lesson 3: Optical sight for direct aiming OP4M. 1. Purpose, technical specifications, completeness. 2. Structure and principle of operation. 3. Optical scheme. Independent work 1. Verification of the zero line of sight. 2. Complete alignment of the gun sights
23.	Group session	4	2	2	Lesson 4. Optical mortar sight MPM-44M. 1. Purpose, technical specifications, completeness. 2. Structure and principle of operation. 3. Optical scheme. Independent work 1. Verification of zero settings. 2. Verification of the zero line of sight
24.	Group session	2	2		Lesson 5. Partial alignment of gun sights. 1. Partial alignment of sighting devices 100 MM ATG MT-12. 2. Partial alignment of sighting devices 122 MM Gun D-30
25.	Group session	2	2		Lesson 6. Partial alignment of mortar sighting devices.

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					1. Partial alignment of sighting devices 120 MM 2B-14. 2. Partial alignment of sighting devices 82 MM KBA-48
26.	Practical session	6	6		Lesson 7. Partial alignment of gun sights. 1. Partial alignment of sighting devices 100 MM ATG MT-12. 2. Partial alignment of sighting devices 122 MM Gun D-30
27.	Practical session	6	6		Lesson 8. Partial alignment of mortar sighting devices. 1. Partial alignment of sighting devices 120 MM 2B-14. 2. Partial alignment of sighting devices 82 MM KBA-48. 3. Modular performance evaluation
		28	14	14	Section 3. Structure and operation of electro-optical devices
		10	4	6	Topic 6. Electro-optical reconnaissance and targeting devices
28.	Group session	4	2	2	Lesson 1: General information about electro-optical devices. 1. Classification and purpose of electro-optical devices. 2. Principle of operation and general structure of electron-optical devices. 3. Purpose, specifications, structure and principle of operation of BN-2. Independent work. 1. Optoelectronic converters. 2. Optoelectronic observation tubes. 3. Sources of energy supply for optoelectronic devices
29.	Group session	6	2	4	Lesson 2: Night sights for small arms and cannons. 1. Purpose, technical specifications, configuration, structure and principle of operation of NSPUM. 2. Purpose, technical specifications, configuration, structure and principle of operation of the APN-5-40.

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
					Independent work 1. Man-portable assembly-type launching system 9P135. 2. Missile guidance device 9Sh119M1. 3. Purpose, technical specifications, set completeness of PNV-57. 4. Purpose, technical specifications, set completeness of TVN-2B
		12	6	6	Topic 7. Quantum rangefinders.
30.	Group session	6	2	4	Lesson 1: General information about quantum rangefinders. 1. Purpose, classification, principle of operation of a quantum rangefinder. 2. General block diagram and principle of operation of a quantum rangefinder. Independent work 1. Optical quantum generators and their classification. Main characteristics. 2. Optical resonators. 3. Receivers of radiant energy. 4. Sources of energy supply for quantum rangefinders. 5. Purpose, technical specifications and completeness. 6. Structure and principle of operation. 7. Principle of range measurement
31.	Group session	4	2	2	Lesson 2: Quantum rangefinder LPR-1. 1. Purpose, technical specifications and completeness. 2. Structure and principle of operation. 3. Principle of range measurement. 4. Quantum rangefinder DAK-2M. Independent work

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					1. Operation with DAK-2M. 2. Operation with LPR-1
32.	Practical session	2	2		Lesson 3. Operation with quantum rangefinders DAK-2M and LPR-1. 1. Operation with DAK-2M. 2. Operation with LPR-1.
		6	4	2	Topic 8: Thermal imaging devices
33.	Group session	4	2	2	Lesson 1: General information about thermal imaging devices. 1. Physical conditions of operation of the thermal imaging device. 2. Generalised structural diagram of a thermal imaging device and the principle of its operation. Independent work 1. The device "Pulsar". 2. Sight "Archer". 3. Preparation for modular control
34.	Group session	2	2		Lesson 2: Thermal imaging reconnaissance devices and sights. 1. Pulsar reconnaissance device. 2. Sight "Archer". 3. Modular performance evaluation
		30	22	8	Section 4. Ground navigation equipment (GNE)
		30	22	8	Topic 9: Topographic positioning devices
35.	Group session	4	2	2	Lesson 1: General information about topographic positioning devices. 1. Classification and purpose of topographic positioning devices. 2. Set and technical specifications of topographic positioning devices. 3. Tactical-level combat management system "Kropyva".

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					<p>Independent work</p> <ol style="list-style-type: none"> 1. The structure of the horizontal correction of a gyrocompass indicator. 2. The structure of the azimuthal correction of the gyrocompass indicator. 3. Correction mechanisms of course plotters.
36.	Group session	2	2		<p>Lesson 2. 1T120 topographic positioning vehicle.</p> <ol style="list-style-type: none"> 1. Purpose and set of 1T120. 2. Purpose, technical specifications, structure of the topographic positioning device 1G13. 3. Purpose and structure of the path sensor. 4. Purpose, technical specifications, structure of the coordinator and indicator tablet.
37.	Group session	4	2	2	<p>Lesson 3: Component parts of 1T120.</p> <ol style="list-style-type: none"> 1. Orientation visor. 2. Purpose, technical specifications, structure of KP-4. 3. Artillery gyrocompass 1G17. <p>Independent work</p> <ol style="list-style-type: none"> 1. Purpose, technical specifications, general structure and completeness of 1G25. 2. Purpose, technical specifications, general structure and completeness of 1G40.
38.	Practical session	6	4	2	<p>Lesson 4. Orientation on the 1T120 vehicle.</p> <ol style="list-style-type: none"> 1. Preparation of 1T120 for work. 2. Orientation on the 1T120. <p>Independent work</p> <ol style="list-style-type: none"> 1. Preparation for fieldwork.
39.	Practical session	2	2		<p>Lesson 5. Alignment of gun and mortar sighting devices in the field.</p> <ol style="list-style-type: none"> 1. Alignment of gun sighting devices.

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<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
					2. Alignment of mortar sighting devices.
40.	Practical session	2	2		Lesson 6. Preparation of artillery devices for operation in night conditions. 1. Orientation with the NSPU. 2. Orientation with APN-5-40.
41.	Practical session	4	2	2	Lesson 7. Working with artillery devices at night. 1. Orientation with BN-2. 2. Orientation with PAB-2AM. 3. Orientation with thermal imagers. Independent work Preparation for the examination
Control measures		6	6		Examination
Total for the discipline		150	100	50	

Missiles and ammunition

General purpose of the educational programme component.

As a result of studying the discipline, the student should

know:

safety measures and the procedure for teaching safety rules when working with missiles and ammunition;

structure and principle of action of ammunition for small arms of domestic production and NATO countries;

structure and principle of action of ammunition for artillery weapons and MLRS systems of domestic and NATO production:

structure, design of ATGMs, MANPADS, ATGMs (OTRMs) of domestic and NATO production;

the procedure for carrying out routine maintenance of ATGM, MANPADS, ATGM (OTGM) of domestic and NATO production;

marking of ammunition, shells, containers of domestic and NATO production;

the structure and principle of operation of grenades, grenade launchers of domestic and NATO countries;

be able to:

conduct classes on the purpose, structure and principle of operation of the main types of missiles and ammunition;

conduct classes on the purpose, structure and principle of operation of the main types of lighting, signalling and imitation equipment;

recognise types of ammunition by markings, branding and different colours;

recognise types of rockets and missiles by their markings and appearance;

organise compliance with and monitor the implementation of safety measures when handling missiles and ammunition;

organise routine maintenance of ATGMs and SAMs;

use the acquired theoretical knowledge and practical skills in organising the operation of ATGM, SAM, TACM (OTRM) missiles.

Organisational and methodological instructions.

The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and learning). It provides a scientific and pedagogical description of the forms and methods of teaching, indicates the most appropriate combinations of them to achieve a certain level of learning, determines the conditions for their most effective use.

To achieve the main learning objective, the programme provides for the following forms of learning:

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The above-mentioned methods provide the trainees with knowledge, skills, and abilities; however, to develop their creative capabilities, the instructor should employ problem-based learning methods.

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the student learns the method and logic of solving a particular problem, but not yet the ability to apply it independently. This method teaches students how to search for knowledge and helps them develop creative thinking skills.

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Problem-based methods provide a deep assimilation of knowledge at the level of its creative application, mastery of creative thinking methods, and practical experience.

During lecture classes.

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The main purpose of the lecture is to systematise the basis of scientific knowledge and practical experience on the topic, the state and prospects of development of management science, theory and practice of management activities of a military leader, to focus on the most complex and nodal issues of the educational material. The lecture should be problem-based, stimulate active cognitive activity of students, and promote creative thinking. In order to enhance the cognitive activity of servicemen and to develop their creative thinking, technical teaching aids should be skilfully used during lectures in combination with active forms and methods of lecturing. Classes should be conducted using the method of oral presentation of educational material, with individual questions and educational elements worked out in the form of a dialogue between the teacher and the students and by asking them problematic questions.

During group sessions.

A group lesson is a type of training session during which the teacher presents new educational material in a verbal and visual way, controls the students' understanding of this material by questioning and helps to consolidate it.

Group classes are held for the purpose of detailed study by students of the issues and problems discussed in lectures and detailed consideration of topical issues of the educational material. The main teaching methods used are explanation with demonstration and discussion. Technical means of information transmission, tables, diagrams, slides, films and posters should be used to ensure visualisation during the classes.

During practical sessions.

Practical training is a type of training session during which the teacher organises the mastering of the theoretical provisions of the topic through individual performance of specially designed tasks and promotes the formation of skills and abilities in the practical application of these theoretical provisions.

Practical classes should be aimed at consolidating and deepening the knowledge acquired by students in lectures and group classes, as well as during independent work, and developing their skills in solving practical problems in their speciality.

During the organisation of independent work:

Independent work should be carried out with the aim of working out and mastering the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for the next classes and control measures; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge among students.

Independent work should be provided with educational literature, study guides, assignments and methodological recommendations. All teaching and learning materials should have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Material and technical support

Classes should be held in specialised classrooms, which should be equipped with personal electronic computing equipment. It is mandatory to use technical means of training during the training sessions.

Information and methodological support:

1. Order of the Ministry of Defence of Ukraine of 29.06.2005 No. 359 "On Approval of the Instruction on Organisation of Accounting, Storage and Issuance of Small Arms and Ammunition in the Armed Forces of Ukraine".
2. Order of the National Guard of Ukraine No. 191 of 30.05.2017. "On Approval of the Regulation on Arsenal, Bases and Storage Warehouses for Missiles and Ammunition of the Armed Forces of Ukraine".
3. Energy-saturated materials and basics of chemical physics. Lecture notes. Sumy. Sumy State University. 2016.
4. Lebedev G.I. Explosives, gunpowder and solid rocket fuel - Sumy: VIA, 2000.
5. Derevianchuk A.Y., Shelest M.B. Artillery weapons and ammunition - Sumy: "Sumy State University Publishing House, 2010.

6. Hand Grenades Manual on marksmanship. OISV. 2001.
7. Handguns. 30-mm automatic grenade launcher on a machine gun (AGS-17). Main Command of the Land Forces of the Armed Forces of Ukraine, 2005. 120 p.
8. Guidelines on marksmanship. Hand grenades. - K.: Ministry of Defence of Ukraine. Main Command of the Land Forces of the Armed Forces of Ukraine, 2005.
9. Manual on marksmanship. 9mm Makarov pistol (PM) - Kyiv: Ministry of Defence of Ukraine. Main Command of the Land Forces of the Armed Forces of Ukraine, 2004.
10. Rifle manual. 5.45 mm Kalashnikov rifle (AK-74, AKS-74, AK-74N, AKS-74N) and 5.45 mm Kalashnikov handguns (RPK-74, RPK-74N, RPK-74N, RPK-74N) - Kyiv: Ministry of Defence of Ukraine. Main Command of the Land Forces of the Armed Forces of Ukraine, 2005.
11. Guidelines on marksmanship. 12.7 mm machine gun "Utes." - Kyiv: Ministry of Defence of Ukraine. Main Command of the Land Forces of the Armed Forces of Ukraine, 2005.
12. Rifle manual. 14.5 mm Volodymyrov heavy machine gun (14.5 KPVT) - Kyiv: Ministry of Defence of Ukraine. Main Command of the Land Forces of the Armed Forces of Ukraine, 2005.
13. Guidelines on marksmanship. RPG-7 hand-held anti-tank grenade launcher. Main Command of the Land Forces of the Armed Forces of Ukraine, 2005.
14. Ablov V.S. Design, theory and calculation of shells and warheads. Penza: PVAIU, 1999.
15. Fundamentals of the device and design of guns and ammunition of ground artillery. Moscow: Voenizdat, 1976.
16. Shagov V.V. Explosives and Gunpowder. Moscow: Voenizdat, 1976.
17. Demidov G.A. Fundamentals of the theory of combustion and explosion. - Penza: PVAIU, 1968.
18. 2S6M self-propelled anti-aircraft gun. 2S6M 00 00 000 Maintenance Manual. - Moscow: Voenizdat, 1990.
19. Ammunition for 122 mm guns of ground, tank and self-propelled artillery. Manual. - Moscow: Voenizdat, 1957.
20. 100-mm anti-tank gun MT-12. Technical description and operating instructions. Part III. Ammunition. - Moscow: Voenizdat.
21. 100-mm ZUOF12 shotgun. Technical description. Supplement to the Service Manual. 100-mm anti-tank gun MT-12. - Moscow: Voenizdat, 1983.
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Topic titles and distribution of study time by types of academic activities

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
	2	3	4	5	6
		47	32	15	Section 1. Explosives and ammunition for small arms and close-combat weapons
		12	8	4	Topic 1: Fundamentals of ballistics and explosives
1.	Lecture	2	2		Lesson 1: Introductory lecture 1. Objectives, content and structure of the discipline "Missiles and Ammunition". The system of assessment of cadets' knowledge of the discipline. 2. History of ammunition development and its classification. 3. Entry assessment
2.	Group session	4	2	2	Lesson 2. General information about internal and external ballistics. 1. Subject and tasks of external ballistics. 2. Subject and tasks of internal ballistics. Independent work 1. Forces and moments acting on a projectile in flight
3.	Group session	4	2	2	Lesson 3: Explosive processes and explosives. 1. Classification of explosive processes. 2. Classification of explosives. 3. Basic properties and characteristics of explosives. Independent work 1. Safety measures when working with explosives
4.	Group session	2	2		Lesson 4. Explosives. 1. Sensitivity of explosives and ways to influence it. Phlegmatizers and sensitizers. 2. Explosive stability and ways to influence it. Catalysts and stabilizers.

					3. Plastic and elastic explosives, their compositions, characteristics and purpose
		21	14	7	Topic 2 Ammunition for small arms
5.	Group session	4	2	2	<p>Lesson 1: Basic structure of small arms ammunition.</p> <p>1. Purpose, classification and requirements for ammunition, methods of fixing in the chamber.</p> <p>2. General structure of ammunition.</p> <p>Independent work</p> <p>1. Basic requirements for the structure of cartridges.</p> <p>2. Features of the classification of cartridges</p>
6.	Group session	2	2		<p>Lesson 2: Design of ammunition for small arms.</p> <p>1. Purpose, structure and principle of operation of cartridges with conventional bullets.</p> <p>2. Features of the structure and principle of operation of cartridges with special bullets</p>
7.	Group session	3	2	1	<p>Lesson 3: Ammunition for special weapons.</p> <p>1. Features of the structure and principle of operation of special ammunition.</p> <p>2. Auxiliary cartridges.</p> <p>3. Ammunition for hunting weapons.</p> <p>Independent work</p> <p>1. Cartridges with double and triple action bullets.</p> <p>2. Features of the structure of blank cartridges.</p> <p>3. Types of cartridges for hunting weapons</p>
8.	Group session	2	2		<p>Lesson 4. Branding, painting and marking of ammunition.</p> <p>1. Marking of ammunition of domestic and NATO countries.</p> <p>2. Painting of ammunition for small arms of domestic and NATO countries.</p> <p>3. Marking boxes with ammunition for small arms of domestic production and NATO countries.</p> <p>Independent work</p> <p>1. Marking wooden and metal boxes with ammunition.</p> <p>2. Features of marking ammunition for small arms in NATO countries</p>
9.	Practical session	6	4	2	<p>Lesson 5. Reading of markings, stamping, and coloring on cartridges and their packaging. Preparation of cartridges for combat use.</p> <p>1. Reading markings and colouring on ammunition and its packaging of domestic and NATO production.</p> <p>2. Preparation of ammunition for combat use.</p> <p>Independent work</p> <p>1. Explosives and basic concepts of explosive processes.</p>

					2. Ammunition for small arms, purpose, features of use, general structure and procedure of use
10.	Seminar	2	2		Lesson 6. Explosives and ammunition for small arms. 1. The concept of explosion, explosive process, explosives and their classification. 2. Ammunition for small arms, purpose, features of use, general structure and procedure for use. 3 Modular assessment №1
		14	10	4	Topic 3 Ammunition for close-combat weapons
11.	Group session	2	2		Lesson 1: Grenade launcher shots. 1. Grenade launcher shots to RPG-7, Carl Gustaf, and its modifications. 2. Grenade launchers for SPG-9, C90-CR (M3) INSTALAZA, RGW90 "Matador" and its modifications
12.	Group session	6	4	2	Lesson 2: Shots to grenade launchers. 1. Grenade launcher shots to automatic grenade launchers MK 19, HK GMG. 3. Grenade launcher shots to under-barrel grenade launchers. Independent work 1. Grenade launcher shots to anti-tank grenade launchers. 2. Grenade launcher shots to automatic grenade launchers. 3. Features of the structure of the VOG-25P shot
13.	Group session	4	4		Lesson 3: Ammunition for infantry fighting vehicles and anti-aircraft guns. 1. Shots to the 2A28 gun. 2. Shots to the 2A42 gun (ZTM-1, ZTM-2, 2A72, KBA-2). 3. Shots to the anti-aircraft gun ZU-23 and its modifications. Independent work 1. Shots to the 2A28 gun. 2. Shots to the 2A42 gun (ZTM-1, ZTM-2, KBA-2). 3. Preparation for a graded credit
		17	12	5	Section 2. Hand Grenades. Pyrotechnic illumination and signalling devices, and simulation equipment
		17	12	5	Topic 4. Hand and rocket-propelled grenades
14.	Group session	2	2		Lesson 1: Purpose, structure and action of hand grenades. 1. Hand fragmentation grenades. 2. Hand anti-tank grenades.
15.	Group session	5	2	3	Lesson 2: Purpose, structure, and function of rocket-propelled anti-tank grenades. 1. Purpose, structure and operation of RPG-18, RPG-75, NLAW, SMAW-D.

					<p>2. Purpose, structure and operation of RPG-22, PANZERFAUST 3.</p> <p>2. Purpose, structure and operation of RPG-26, AT-4, C90-CR-AM (M3).</p> <p>Independent work</p> <p>1. History of the development of hand fragmentation grenades.</p> <p>2. Features of the use of anti-tank grenades.</p> <p>3. Tactical and technical characteristics of RPG-18, RPG-22, RPG-26</p>
16.	Practical session	6	4	2	<p>Lesson 3: Reading markings, stamping and colouring on 2A42, 2A28, ZU-23 rounds, grenade launchers, hand grenades, anti-tank grenades and rocket-propelled anti-tank grenades. Preparing them for combat use.</p> <p>1. Reading markings, stamping and colouring on 2A42, 2A28, 2A72, ZU-23 rounds, grenade launchers, hand grenades, anti-tank grenades and rocket-propelled anti-tank grenades.</p> <p>2. Preparation of shots for 2A42, 2A28, 2A72, ZU-23, grenade launchers, hand grenades, anti-tank grenades and rocket-propelled anti-tank grenades for use.</p> <p>Independent work</p> <p>1. Reading markings, branding and colouring on 2A42, 2A28, 2A72, ZU-23 rounds, grenade launchers, hand grenades, anti-tank grenades and rocket-propelled grenades</p>
17.	Group session	2	2		<p>Lesson 4. Reactive lighting cartridges.</p> <p>1. Classification of pyrotechnic means.</p> <p>2. Rocket-propelled illumination cartridges, preparation for use, and safety precautions .</p> <p>3. Marking of rocket-propelled illumination cartridges</p>
Control measures		2	2		Differential credit
		55	36	19	Section 3. Artillery ammunition
					Topic 5. Artillery ammunition
18.	Lecture	4	2	2	<p>Lesson 1: General information about artillery shots.</p> <p>1. Artillery rounds and their main and additional elements, domestic and NATO production.</p> <p>2. Classification of artillery rounds of domestic and NATO production.</p> <p>3. Safety measures for various types of work with artillery shots and shells.</p> <p>Independent work</p> <p>1. Classification of artillery shots.</p> <p>2. Requirements for the design of artillery shots</p>
19.	Group session	4	2	2	<p>Lesson 2: Theoretical foundations of artillery shell structure.</p> <p>1. The principle of the structure of artillery shells.</p>

					<p>2. Classification of artillery shells.</p> <p>3. The main design characteristics of artillery shells.</p> <p>Independent work</p> <p>1. Classification of artillery shells.</p> <p>2. Requirements for artillery shells.</p>
20.	Group session	4	2	2	<p>Lesson 3: Main purpose artillery shells.</p> <p>1. Purpose, structure, effect of fragmentation shells of domestic and NATO production.</p> <p>2. Purpose, structure, effect of high-explosive shells of domestic and NATO production.</p> <p>3. Purpose, structure, effect of high-explosive fragmentation shells of domestic and NATO production.</p> <p>Independent work</p> <p>1. Design characteristics of fragmentation and high-explosive shells of domestic production and NATO countries.</p> <p>2. Purpose, structure, effect of fragmentation shells of domestic production and NATO countries.</p> <p>3. Purpose, structure, effect of high-explosive shells of domestic and NATO production</p>
21.	Group session	2	2		<p>Lesson 4. Main purpose artillery shells.</p> <p>1. Purpose, structure and effect of concrete-piercing shells of domestic and NATO production.</p> <p>2. Purpose, structure and effect of armour-piercing shells of domestic and NATO production</p>
22.	Group session	4	2	2	<p>Lesson 5. Main purpose artillery shells.</p> <p>1. Purpose, structure and effect of projectiles with ready-made killing elements, cluster munitions of NATO countries.</p> <p>2. Purpose, structure, effect of incendiary shells of domestic and NATO production.</p> <p>Independent work</p> <p>1. Purpose, structure and effect of fragmentation, high-explosive and fragmentation-fragmentation shells.</p> <p>2. Purpose, structure and effect of shells with ready-made killing elements</p>
23.	Group session	6	4	2	<p>Lesson 6. Main purpose artillery shells.</p> <p>1. Purpose and classification of domestic and NATO cumulative shells.</p> <p>2. Structure and effect of domestic and NATO cumulative shells.</p> <p>Independent work</p> <p>1. Purpose, structure and effect of armour-piercing shells.</p> <p>2. Purpose, structure and effect of cumulative shells</p>
24.	Group session	4	2	2	<p>Lesson 7. Special purpose artillery shells.</p> <p>1. Purpose, structure and effect of lighting and propaganda shells.</p>

					<p>2. Purpose, structure and effect of smoke and targeting shells.</p> <p>3. Purpose, structure and effect of shells that establish active radio interference of domestic and NATO production.</p> <p>Independent work</p> <p>1. Effect of propaganda and illumination shells.</p> <p>2. Effect of smoke and targeting shells</p>
25.	Group session	4	4		<p>Lesson 8. Features of the structure of tank ammunition.</p> <p>1. Requirements for the structure of tank shots, ammunition of tank guns of domestic and NATO production.</p> <p>2. Combat purpose, structure and effect of tank shots</p>
26.	Group session	6	4	2	<p>Lesson 9. General structure of mortar rounds.</p> <p>1. Purpose and general structure of mortar rounds of domestic and NATO production.</p> <p>2. Combat purpose and classification of mines of domestic and NATO production.</p> <p>3. General structure and principle of operation of mines of basic and special purpose.</p> <p>Independent work</p> <p>1. General structure of mortar shots.</p> <p>2. Combat purpose and principle of operation of main and special purpose mines</p>
27.	Group session	2	2		<p>Lesson 10. Combat charges.</p> <p>1. Purpose and types of ammunition, requirements for them.</p> <p>2. Fixed combat charges.</p> <p>3. Variable combat charges.</p> <p>4. Modular combat charges.</p> <p>5. Monoblock combat charges</p>
28.	Group session	3	2	1	<p>Lesson 11. Combat charges.</p> <p>1. Purpose, structure and action of shell casings.</p> <p>2. Purpose, types of ignition means, requirements for their design.</p> <p>3. Requirements for marking and stamping of ammunition, cartridge cases and ignition devices of domestic and NATO production.</p> <p>Independent work</p> <p>1. Marking and stamping of ammunition.</p> <p>2. Marking and tamping of cartridge cases and ignition devices</p>
29.	Group session	4	2	2	<p>Lesson 12. General information about high-precision weapons and high-precision ammunition.</p> <p>1. Concept and classification of high-precision weapons.</p>

					2. Purpose, technical specifications, principle of construction and operation of existing high-precision ammunition of domestic and NATO production. Independent work 1. Reconnaissance-strike and reconnaissance-firing systems, an example of application
30.	Group session	6	4	2	Lesson 13. Marking, painting and labelling of artillery ammunition. 1. Colouring of artillery ammunition of domestic and NATO production. 2. Marking and indexing of artillery ammunition of domestic and NATO countries. 3. Marking of artillery ammunition of domestic and NATO countries. Independent work 1. Painting of artillery ammunition. 2. Marking and indexing of artillery ammunition. 3. Marking of artillery ammunition
31.	Practical session	2	2		Lesson 14. Reading markings on projectiles, ammunition and ammunition containers. 1. Practical application of knowledge of safety measures when handling ammunition and preparing it for firing. 2. Read markings on projectiles, ammunition charges and ammunition containers of domestic and NATO production. 3. Sorting of artillery ammunition
		20	14	6	Topic 6. Explosive devices.
32.	Lecture	3	2	1	Lesson 1: Design of fuzes. 1. Purpose and schematic diagrams of fuzes. 2. Composition and purpose of fuze elements. 3. Classification of fuzes. Independent work 1. Purpose and schematic diagrams of fuzes. 2. Composition and purpose of fuze elements. 3. Classification of fuzes
33.	Group session	3	2	1	Lesson 2: Purpose, design principles, and functioning of the main mechanisms and components of fuzes. 1. Requirements for the design of fuzes. 2. Mechanisms and components of fuzes. 3. Purpose, schematic diagram and principle of operation of radio fuzes. Independent work

					<ul style="list-style-type: none"> 1. Requirements for the design of fuzes. 2. Mechanisms and components of fuzes. 3. Purpose, schematic diagram and principle of operation of radio fuzes
34.	Group session	5	4	1	<p>Lesson 3: Structure of mechanical impact fuzes.</p> <ul style="list-style-type: none"> 1. Purpose, structure and operation of the RGM-2, M557 (M557S1) mechanical impact fuze. 2. Purpose, structure and operation of the RGM-6, B-429, M72V1A mechanical impact fuzes. <p>Independent work</p> <ul style="list-style-type: none"> 1. Purpose, structure, and function of impact mechanical of RGM-6, B-429 fuzes
35.	Group session	4	2	2	<p>Lesson 4. The structure of mechanical fuzes .</p> <ul style="list-style-type: none"> 1. Purpose, structure and operation of impact fuzes for M-6 and M-12 mines. 2. Purpose, structure and operation of the GVMZ-7 fuze. <p>Independent work</p> <ul style="list-style-type: none"> 1. Purpose, structure and operation of impact fuzes for mines M-6, M-12. 2. Purpose, structure and operation of the GVMZ-7 fuze
36.	Group session	3	2	1	<p>Lesson 5. Structure of piezoelectric fuzes and fuzes for rocket projectiles.</p> <ul style="list-style-type: none"> 1. Purpose, structure and operation of the GPV-2 fuze. 2. Purpose, structure and operation of the MRV-U fuze. <p>Independent work</p> <ul style="list-style-type: none"> 1. Purpose, structure and operation of the GPV-2 fuze. 2. Purpose, structure and operation of the MRV-U fuze
37.	Seminar	2	2		<p>Lesson 6. Fuzes for artillery ammunition.</p> <ul style="list-style-type: none"> 1. Marking, branding and painting of artillery shots. 3. Purpose, structure and principle of operation of fuzes
		13	8	5	Section 4. Rocket projectiles and missiles
		13	8	5	Topic 8: Rocket projectiles
38.	Group session	4	2	2	<p>Lesson 1: General structure of rocket projectiles and missiles.</p> <ul style="list-style-type: none"> 1. Rocket projectile, missile, and their components. 2. Aerodynamic configurations of missiles. 3. Classification of rocket projectiles and missiles and their requirements. <p>Independent work</p> <ul style="list-style-type: none"> 1. Cruise missile and its elements. 2. Anti-ship missile and its components

39.	Group session	3	2	1	<p>Lesson 2. 122 mm rocket projectiles for Grad, Verba and RM-70 Vampir MLRS.</p> <p>1. Purpose and use of rocket projectiles. 2. Structure and principle of operation of rocket projectiles.</p> <p>Independent work</p> <p>1. History of the development of rocket projectiles. 2. Modifications of rocket projectiles</p>
40.	Group session	2	2		<p>Lesson 3. 220 mm rocket projectiles for Uragan and Bureviy MLRS.</p> <p>1. Purpose and use of rocket projectiles. 2. Structure and principle of operation of rocket projectiles.</p> <p>Independent work</p> <p>1. History of the development of rocket projectiles. 2. Modifications of rocket projectiles.</p>
41.	Group session	3	2	1	<p>Lesson 4. 300mm guided rocket projectiles for Smerch and Vilkha MLRS.</p> <p>1. Purpose and use of rocket projectiles. 2. Structure and principle of operation of rocket projectiles.</p> <p>Independent work</p> <p>1. History of the development of guided rocket projectiles. 2. Modifications of guided rocket projectiles</p>
		28	18	10	Section 4 Rocket projectiles and missiles
		28	18	10	Topic 9. Missiles for anti-tank, anti-aircraft and tactical missile systems
42.	Lecture	4	2	2	<p>Lesson 1: Onboard missile equipment.</p> <p>1. Purpose, composition and placement of onboard missile equipment. 2. Command guidance system. 3. Communication channel.</p> <p>Independent work</p> <p>1. Purpose, composition, and placement of onboard equipment of cruise missiles. 2. Purpose, composition and placement of onboard equipment of anti-ship missiles</p>
43.	Group session	2	2		<p>Lesson 2. Missiles for man-portable anti-tank missile systems.</p> <p>1. Purpose, structure and operation of the 9M113 (9M111) ATGM. 2. Purpose, structure and operation of missiles for the Stugna RK-2S (RK-2IS) ATGM</p>
44.	Group session	4	2	2	<p>Lesson 3. Missiles for man-portable anti-tank missile systems.</p> <p>1. Purpose, structure and operation of the 9M115 and 9M114 ATGMs.</p>

					2. Purpose, structure and operation of missiles for the "Corsair" ATGM RK-3OF, RK-3K (RK-3I). Independent work 1. Purpose, structure and operation of missiles for the FGM-148 "Javelin" ATGM. 2. Purpose, structure and operation of missiles for the NLAW ATGM
45.	Group session	2	2		Lesson 4. Missiles for surface-to-air missile systems. 1. Purpose, structure and operation of the 9M39 surface-to-air guided missile. 2. Features of the structure surface-to-air missile system 9M313
46.	Group session	4	2	2	Lesson 5. Missiles for anti-aircraft missile systems. 1. Purpose, structure, and operation of the 9M37 surface-to-air guided missile. 2. Purpose and design features of the 9M311 surface-to-air guided missile. Independent work 1. Purpose, structure, and operation of very short-range surface-to-air missile system missiles. 2. Purpose, structure, and operation of short-range surface-to-air missile system missiles
47.	Group session	4	2	2	Lesson 6. Missiles of tactical missile systems. 1. Purpose, tactical and technical characteristics of the 9M79-1 missile. 2. Composition and general structure of the 9M79-1 missile's rocket section. 3. Composition, general structure and operation of the main parts of 9N123K and 9N123F. Composition, general structure, and function of the warheads 9N123K and 9N123F. Independent work 1. Features of the structure of missiles. 2. Reading the markings of missiles
48.	Practical session	4	2	2	Lesson 7. Marking of ATGM and MANPADS missiles. 1. Marking of missiles 9M113 (9M111), 9M114, 9M115, RK-2S (RK-2IS) and RK-3OF (RK-3K, RK-3I). 2. Marking of 9M39, 9M37, 9M311 and 9M79-1 missiles. 3. Peculiarities of marking of ATGMs and SAMs of NATO countries. Independent work 1. Preparation for the examination
Control measures		4	4		Examination
Total forthe discipline		180	120	60	

Implementation and operation of specialised software based on SAP S/4HANA ‘LIS 1.0’ within the information and communication system for logistics management

General purpose of the discipline (subject of study).

As a result of studying the discipline, the student should

know:

the main provisions of the guidelines for accounting, write-off, categorisation and storage of rocket and artillery weapons during combat operations;

the procedure for accounting and reporting, write-off of material assets of the relevant nomenclature of RAA during combat operations.

the procedure for organising UAV accounting in the logistics information system (LIS) based on the defence resource management system (SAP).

be able to:

organise high-quality accounting and reporting of material assets of the relevant RAA nomenclature during combat operations;

organise high-quality storage and issuance of material assets of the relevant RAA nomenclature during combat operations;

organise proper classification and disposal of materiel of the relevant RAA nomenclature during conduct of combat operations;

organise and methodically correctly account for UAVs in the logistics information system (LIS) based on the defence resource management system (SAP).

Organisational and methodological instructions.

The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and learning). It provides a scientific and pedagogical description of the forms and methods of teaching, indicates the most appropriate combinations of them to achieve a certain level of learning, and determines the conditions for their most effective use.

To achieve the main learning objective, the programme provides for the following forms of learning:

frontal form of learning, when all students perform the same task at the same time under the supervision of a teacher;

group form of training, when students are combined into groups (departments) depending on the staffing structure of the unit, which work in parallel;

individual form of training, when students complete tasks sequentially, one by one.

In this case, depending on the need to achieve levels of knowledge or skills, the teacher should use the following methods verbal and visual;

training;

situational and cognitive.

The verbal-visual method is used when the instructor systematically and consistently delivers the training material and demonstrates the objects under study in order to provide the trainees with new knowledge and to develop the appropriate conceptual understanding.

The training (reproductive) method consists in performing a sequence of integrated actions in accordance with the algorithm specified by the instructor (a pre-established procedure) in order to develop the necessary skills and to ensure the cohesion of military organisational structures.

The situational-cognitive method consists in conducting the review and discussion of actual (or probable) actions, familiarising trainees with the experience of command and control of troops (forces) in military conflicts, and developing information and analytical skills.

The above-mentioned methods provide the trainees with knowledge, skills, and abilities; however, to develop their creative capabilities, the instructor should employ problem-based learning methods.

Problem-based teaching is when the class leader poses a problem to the students, solves it himself, but at the same time shows the ways of solving it, reveals the course of his thought. The immediate result of problem-based teaching should be that the student learns the method and logic of solving a particular problem, but not yet the ability to apply it independently. This method teaches students how to search for knowledge and helps them develop creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to solving problems on their own by first teaching them how to perform certain elements of the solution. It is used during group exercises when the method of finding the optimal solution is determined by the class leader, but the solution is found by the student.

Problem-based methods provide a deep learning of knowledge at the level of its creative application, mastery of creative thinking methods, and practical experience.

During group sessions.

A group lesson is a type of training session during which the teacher presents new educational material in a verbal and visual way, controls the students' learning of this material by questioning and helps to consolidate it.

Group classes are held for the purpose of detailed study by students of the issues and problems discussed in lectures and detailed consideration of topical issues of the educational material. The main teaching methods used are explanation with demonstration and discussion. Technical means of information transmission, tables, diagrams, slides, and posters should be used to ensure visualisation during the classes.

During practical sessions.

Practical training is a type of training session during which the teacher organises the mastering of the theoretical provisions of the topic through individual performance of specially designed tasks and promotes the formation of skills and abilities in the practical application of these theoretical provisions.

Practical exercises should be aimed at consolidating and deepening the knowledge acquired by students in group classes and during independent work, and at developing skills in solving practical problems of everyday military activities.

Material and technical support.

Classes should be held in specialised classrooms, which should be equipped with personal computers, and at the training centre's training ground. It is mandatory to use technical training aids during the training sessions.

Information and methodological support:

1. "Regulations on the military (ship) economy of the Armed Forces of Ukraine" approved by the Order of the Minister of Defence of Ukraine of 16.07.1997 No. 300.
2. "Instructions on Categorisation of Missile and Artillery Weapons" approved by the Order of the Minister of Defence of Ukraine of 04.01.2019 No. 4.
3. "Instructions on the organisation of repair of rocket and artillery weapons in peacetime" approved by the Order of the Ministry of Defence of Ukraine of 16.08.2012 No. 545.
4. "Instructions on Accounting for Military Property in the Armed Forces of Ukraine" was put into effect by the Order of the Minister of Defence of Ukraine of 17.08.17 No. 440, as amended on 11 January 2024 No. 21.

5. "Instruction on the Organisation of Accounting, Storage and Issuance of Small Arms and Ammunition in the Armed Forces of Ukraine" was approved by the Order of the Minister of Defence of Ukraine of 29.06.2005 No. 359, as amended on 30 December 2021 No. 404.

6. "Instructions on the peculiarities of conducting an inventory of small arms, missiles and ammunition in the Armed Forces of Ukraine" was put into effect by the Order of the Minister of Defence of Ukraine of 10.01.2017 No. 16.

7. The "Methodology for Determining the Residual Value of Property of the Armed Forces of Ukraine and Other Military Formations" was enacted by the Resolution of the Cabinet of Ministers of Ukraine of 29.05.1998 No. 759.

8. "The Procedure for Write-Off of Military Property in the Armed Forces of Ukraine and the State Special Transport Service was enacted by the Order of the Minister of Defence of Ukraine of 29.03.2021 No. 81.

9. Law of Ukraine "On the Statute of the Internal Service of the Armed Forces of Ukraine" was enacted on 24.03.1999, No. 548-XIV.

10. Law of Ukraine "On the Legal Regime of Property in the Armed Forces of Ukraine" was enacted on 21.09.1999, No. 1075-XIV.

11. Training portal of the logistics information system (LIS). tutor.mil.ua

Topic titles and distribution of study time by types of academic activities

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
		60	52	8	Topic 1: Accounting of UAVs within the Logistics Information System (LIS) based on the Defence Resource Management System (SAP)
1.	Group session	4	4		Lesson 1: Organisation and types of property receipt in a military unit. 1. UAV accounting system based on SAP. 2. System navigation: Concepts of cockpits and transactions. 3. Distance learning portal. 4. Materials directory in the system. 5. Receipt of property under a requisition. 6. Printed Form ‘Waybill for the transfer of military property between military units’”
2.	Practical session	3	2	1	Lesson 2: Execution of property transfers between military units 1. Receipt of property under a requisition. 2. Report ‘List of material documents’ (transaction mb51). 3. Printed Form ‘Waybill for the transfer of military property between military units’”. Independent work 1. Selection criteria configuration. 2. Creation and saving of formats
3.	Group session	2	2		Lesson 3: Primary Reporting in the System: Receipt of Property Without a Requisition 1. Types of movements in the system. 2. Report: list of material documents.

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
1	2	3	4	5	6
					3. Report: material stock balances. 4. Receipt of property without a requisition: Types of receipts without a requisition
4.	Practical session	3	2	1	Lesson 4. Receipt of property in the system 1. Receipt of property without a requisition. 2. Analysis of receipts in the 'List of material documents' report. Independent work 1. Creating a report on property receipts for a specified period
5.	Group session	4	4		Lesson 5. Fundamentals of property transfers in the system 1. Requisition and allocation order. Creating a requisition in the system. 2. Approval of the order. 3. Creation of deliveries and issue of property. 4. Report: requisition processing control (transaction ymm_tf). 5. Electronic requisition
6.	Practical session	5	4	1	Lesson 6. Execution of property transfers between military units in the system 1. Creation and approval of a requisition. 2. Formation and issue of property. 3. Receipt of property under a requisition. 4. Monitoring requisition execution in transaction YMM_TF. Independent Work: 1. Generating a printed form of the electronic requisition via report YMM_TF. 2. Generating a printed form via the cockpit

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
7.	Group session	5	4	1	<p>Lesson 7. Movement of property in the system within one plant</p> <ol style="list-style-type: none"> 1. The concept of reservation, stages of reservation. 2. Moving property between warehouses (movement type 311). 3. Change of category (movement type yc1). 4. Report list of materials documents. 5. Report: material stock balances. <p>Independent work</p> <ol style="list-style-type: none"> 1. Printed form of the acceptance and transfer Certificate. 2. Printed form of the stock transfer note between warehouses (internal transfer Act)
8.	Practical session	4	4		<p>Lesson 8. Movement of property in the system within one plant.</p> <ol style="list-style-type: none"> 1. Receipt of property against a requisition / without a requisition. 2. Issue of property to units. 3. Change of category. 4. Printed forms of a waybill for the issue of property to a unit.
9.	Group session	4	4		<p>Lesson 9. Working with equipment</p> <ol style="list-style-type: none"> 1. Report Display equipment IH08. 2. Setting up the report. 3. Changing the manufacturer's serial number. 4. Changing the operational status of an asset. 5. Mass change of property status. 6. Form 6.11 within the IH08 report

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
10.	Practical session	5	4	1	Lesson 10. Maintaining quality records of property statuses 1. Change of user property status 2. Working with property attributes. 3. Generating reports within transaction IH08. Independent work 1. Using SAP internal mail. 2. Sending/receiving reports via SAP internal mail
11.	Group session	2	2		Lesson 11. Advanced reporting in the system. 1. Report: stock as of posting date. 2. Movement of serial numbers
12.	Practical session	4	4		Lesson 12. Analysis of system activities based on reports. 1. Receipt of property under a requisition. 2. Receipt of property without a requisition. 3. Stock as of posting date. 4. Movement of serial numbers. Independent work Tracking the asset lifecycle in the system
13.	Group session	2	2		Lesson 13. Cancellation of actions in the system. 1. Reversal (migo). 2. Cancellation of issue via transaction v109. 3. Cancellation of delivery creation v102n

No.	Types of lessons and assessment activities	Total hours	Among them		Topic title and learning points
			Contact hours	Independent work	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
14.	Practical session	6	6		<p>Lesson 14. Practical exercises in correcting actions. Entering balances into the system.</p> <ol style="list-style-type: none"> 1. Creation and approval of a requisition. 2. Preparation and issue of assets. 3. Cancellation of delivery and issue via VL02 and VL0. 4. Receipt of Assets. 5. Reversal of receipt. 6. Entering balances for unordered receipts. 7. Checking the availability of requisitions for asset receipt. <p>Independent work Revision of covered material. Examination preparation</p>
Control measures		4	4		Graded credit
Total for the discipline		60	52	8	