MINISTRY OF DEFENCE OF UKRAINE

Military Academy (Odesa)

EDUCATIONAL PROGRAMME OF THE COURSE PROFESSIONAL MILITARY EDUCATION

PROFESSIONAL COURSE OF TACTICAL LEVEL
OPERATION AND REPAIR
ROCKET AND ARTILLERY WEAPONS, L-1B (ORRAW)

(course name, course code according to the Catalogue)

by military accounting specialty 707100 "Operation and repair of missile weapons",
707200 "Operation and repair of artillery weapons",
707300 "Operation and repair of small arms"

APPROVED
Academic Council of the Military Academy (Odesa)
(minutes of "____" ____ 20___ year No___)
Chairman of the Academic Council
Military Academy (Odesa)
major general

Andriy KOVALCHUK

Put into effect
by the order of the head of the Military Academy
(m. Odesa) dated "____" ____ 20___ year No___

O d e s a

2 0 2 4

APPROVAL SHEET

EDUCATIONAL PROGRAMME OF THE COURSE PROFESSIONAL MILITARY EDUCATION

PROFESSIONAL COURSE OF TACTICAL LEVEL OPERATION AND REPAIR ROCKET AND ARTILLERY WEAPONS, L-1B (ORRAW)

(course name, course code)

by military accounting specialty 707100, 707200, 707300 " Operation and repair of rocket and artillery weapons "

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

Volodymyr MIRNENKO
____ _____20

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

Oleg PAVLOVSKY
_____ _____ 20 years

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

Volodymyr KARPENKO
____ _____20

Developed and introduced

Chairman of the working group
Head of the Central Directorate for the Provision of Weapons of the Command of the Logistics Forces of the Armed Forces of Ukraine
Brigadier General

Serhiy TSARIY
____ _____20

PREFACE

DEVELOPED by the working group of the Command of the Logistics Forces of the Armed Forces of Ukraine and the Military Academy (Odesa).

Order of the Commander of the Logistics Forces of the Armed Forces of Ukraine dated March 1, 2024 No_60.

Chairman of the working group –

TSARIY Serhiy Viktorovych, Head of the Central Directorate for the Provision of Weapons of the Command of the Logistics Forces of the Armed Forces of Ukraine, Brigadier General.

Members of the working group:

KONDAKOV Gennadiy Serhiiovych, Deputy Head of the Department of Provision of Close Combat Means and Reconnaissance of Armament of the Command of the Logistics Forces of the Armed Forces of Ukraine, Colonel;

NIKUL Stanislav Oleksiyovych, Head of the Department of Rocket and Artillery Armament, Faculty of Training of Rocket and Artillery Weapons Specialists, Military Academy (Odesa), Candidate of Technical Sciences, Associate Professor, Colonel;

PETRUSHENKO Mykola Mykolayovych, Professor of the Department of Rocket and Artillery Armament, Faculty of Training of Rocket and Artillery Weapons Specialists of the Military Academy (Odesa), Doctor of Technical Sciences, Professor, Honored Worker of Science and Technology of Ukraine, Worker of the Armed Forces of Ukraine;

HOLOVAN Vyacheslav Hryhorovych, Professor of the Department of Rocket and Artillery Weapons of the Faculty of Training of Rocket and Artillery Weapons Specialists of the Military Academy (Odesa), Candidate of Technical Sciences, Professor, Employee of the Armed Forces of Ukraine.

CONSIDERED:

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

2. Comments of internal and external stakeholders.

3. Offers of students.

4. Experience in warfare.

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

1 – General information	
Full name of the HEI	Military Academy (Odesa)
Title of the document on the completion and scope of the educational programme of the course of professional military education	Certificate of completion of the course "Operation and repair of rocket and artillery weapons, L-1B (ORRAW), according to MOS (Military Occupational Speciality) 707100, 707200, 707300". Scope of the educational programme: 21 ECTS credits.
Prerequisites	Availability of higher education degree not lower than "bachelor"; completion of the basic course of the tactical level L-1A.
Language(s) of instruction	Ukrainian (English)
Validity of the educational programme of the vocational education course	Before updating or introducing a new educational programme.
2 – The purpose of the educational programme of the course of professional military education	
Training of a tactical-level officer who is competent in the operation of rocket and artillery armament, capable of performing tasks as assigned in positions with the full-time category of "senior lieutenant", to carry out professional activities in accordance with official duties, to be a leader in the military team, to make decisions in accordance with the requirements of governing documents and critical analysis of the situation, to be responsible for them, to be responsible for subordinates. Performance of official (special) duties that determine the scope of tasks assigned by the position and other regulatory legal acts.	
3 – Characteristics of the educational programme of the course of professional military education	
Subject area	Field of knowledge: "14 Electrical Engineering"; Specialty: "141 Electric Power Engineering, Electrical Engineering and Electromechanics"; Specialization: "Operation and repair of rocket and artillery armament".
The main focus of the educational programme of the vocational education course	Professional military education for military service in typical positions defined in the professional standard of an officer of the tactical level.
Features of the programme	Training in the system of multi-level professional military education of officers of the Armed Forces of Ukraine. Features of the combat experience of the Russian-Ukrainian war.
4 – Suitability of graduates for employment and further study	
Employability	Typical positions of persons with the staff category "senior lieutenant", which are defined in the professional standard of a tactical officer: - commander of the special works platoon of the repair company; - commander of the evacuation platoon of the evacuation company;

	- deputy commander of the repair company; - repair platoon commander; - engineer of the technical control department; - assistant of the head of the storage department; - assistant to the Head of the Accounting and Operations Department; - head (assistant chief) of the service (SHPK, senior lieutenant).
Further training	Preparation according to the educational programme of the course of professional military education "Command Course of the Tactical Level of Management of the Operation of Ground Weapons Systems, Close Combat Means and Reconnaissance, L-1C (UENSOBSBRD)"
5 – Teaching and Assessment	
Teaching and learning	The main types of training sessions used to teach the components of the educational programme: lectures; seminar, group, practical, group exercises; tactical (tactical-combat, tactical-special) independent classes, including at the field training base.
Evaluation	Assessment of the learning outcomes of course participants includes the entire range of control measures provided for by the programmes of academic disciplines, and is carried out on a 100-point scale, ECTS scale and national scale.
6 – Programme competencies	
Military-special competencies (MSC)	MSC 1 Ability to perform specialized tasks of logistics support in the direction of professional activity.
	MSC 2 Ability to organize the procedure for keeping records, categorization, and storage of rocket and artillery weapons in units of military formation.
	MSC 3 Ability to use knowledge of the structure of artillery devices to perform practical tasks in professional activities.
	MSC 4 Ability to organize the implementation of military repair of rocket and artillery weapons in units of military formation.
7 – Results of preparation	
Military-special training	LOMS 1 Apply knowledge of logistical support of units of a military unit.
	LOMS 2 Organize and carry out accounting, categorization, write-off and storage of rocket and artillery weapons in units of military units.
	LOMS 3 Use artillery devices, monitor their technical condition, carry out calibrations and inspections of devices. Organize the operation and repair of artillery devices in the troops. To master new models of artillery devices on their own. Monitor compliance with safety measures during the operation of artillery devices.
	LOMS 4 Apply the acquired knowledge for the operation and repair of samples of rocket and artillery weapons in units of military units. Categorize samples of rocket and artillery weapons. Draw conclusions from the technical characteristics of samples of rocket and artillery weapons.
8 – Resource support for the implementation of the programme	
Staffing	Scientific and pedagogical workers involved in the educational programme are full-time employees of the Military Academy, some of them have academic degrees, academic titles and a confirmed level of scientific and professional activity. The formation of professional competencies is provided by professionals with experience in their specialty.

	The practice-oriented nature of the educational programme provides for the wide participation of practitioners who correspond to the direction of the programme, which strengthens the synergistic relationship between theoretical and practical training. The head and members of the working group for the development of the programme, as well as the teaching staff who ensure the implementation of the educational programme, meet the requirements determined by the Ministry of Defence of Ukraine
Logistics	To implement the competencies and learning outcomes specified in the educational programme, the material and technical base of the Military Academy (Odesa) and the Centre for Support of the Educational Process of the Military Academy are used. 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: educational premises; computer classes (laboratories); specialized laboratories; sports halls, sports grounds; library, reading room; multimedia equipment; premises for scientific and pedagogical workers; barracks premises; dining room, etc.
Informational and educational support	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, consists of the following materials: instructional and methodological materials of practical classes; educational and methodological materials on all types of educational classes; methodological instructions for the implementation of works (projects); methodological guidelines for the organization of independent work; programmes of all types of practical training; diagnostic tools. The library fund is used in education, including educational materials, educational and methodological developments of pedagogical workers. For the implementation of the programme, the virtual learning environment of the Military Academy (Odesa), author's developments, textbooks and manuals and other educational and methodological materials are used. The official website of the Academy (http://vaodesa.mil.gov.ua/) contains information about educational, scientific and educational activities, structural units, admission rules, contacts, users have the opportunity to use all available library resources. There is a technological and logistical support for the educational process.

2. LIST OF COMPONENTS OF THE EDUCATIONAL PROGRAMMEME OF THE COURSE OF PROFESSIONAL MILITARY EDUCATION AND COMPLIANCE OF PROGRAMMEME COMPETENCIES AND LEARNING OUTCOMES WITH THE COMPONENTS OF THE EDUCATIONAL PROGRAMMEME

2.1. List of components of the OP

Code n/disc.	Components of the educational programme (academic disciplines/modules)	Quantity Loans	Form of final control
MS 01	Basics of logistics support	5	Exam
MS 02	Organization of Provision and Maintenance of Rocket and Artillery Weapons in Units of a Military formation	5	Exam
MS 03	Structure and operation of artillery devices	5	Exam
MS 04	Organization of military repair of rocket and artillery armament	6	Exam
MS 05	Organization of the use of special software based on SAP S/4HANA "LIS 1.0". information and communication system for managing logistics support	2	Differentiated Credit
Total under the credit programme		23	

2.2 Correspondence of programme competencies 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

	Sun 01	Sun 02	Sun 03	Sun 04	Sun 05
LOMS 1	+				+
LOMS 2		+			+
LOMS VSP 3			+		
LOMS VSP 4				+	

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

No	Code of the academic discipline	Name of the discipline (module)	Semester breakdown		Number of ECTS credits	Number of hours					Control measure	Independent work	Distribution of classroom hours by courses and semesters*							
							Classroom						1 course		2 course		3 course		4 course	
								including					Semesters							
			Exams	Differentiated tests		Total volume	Total	Lecture	Group Seminars	practical, laboratory			1	2	3	4	5	6	7	8
													Number of weeks in a 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	Basics of logistics support	8th sem. 6 hrs.	7th sem. 2 hrs	5	150	100	8	54	30	8	50								
2	MS 02	Organization of provision and maintenance of RAA in units of a military formation.	7th sem. 6 hrs.	4th sem. 2 hrs	5	150	100	4	50	38	8	50							**3**	**2**
3	MS 03	Structure and operation of artillery devices	6th sem. 6 hrs.	5th sem. 2 hrs	5	150	100	6	58	28	8	50				**1**	**1**	**2**	**1**	
4	MS 04	Organization of military repair of rocket and artillery armament	8th sem. 6 hrs.	6th sem. 2 hrs	6	180	120	4	74	34	8	60					**2**	**3**		
5	MS 05	Organization of the use of special software based on SAP S/4HANA "LIS 1.0". information and communication system for managing logistics support	-	8th sem. 2 hrs	2	60	52	-	22	26	4	8								**2**
Total:					**22**	**690**	**472**	**22**	**258**	**156**		**118**				**2,5**	**3,5**			**4**
Total number																				
Number of hours per week																**6**	**6**	**6**	**6**	**6**
Number of exams																		**1**	**1**	**2**
Number of differentiated tests (tests)																**1**	**2**		**1**	**1**

4. PROGRAMMES OF ACADEMIC DISCIPLINES OF THE EDUCATIONAL PROGRAMME

Basics of logistics support

The general goal of the component of the educational programme:

purpose:

Based on the results of studying the academic discipline, the student of the courses must

know:

the main provisions of the governing documents on the organization of logistical (technical) support of units and subunits;

the procedure for equipping troops with weapons, means of close combat and reconnaissance, means of destruction, military-technical property;

the concept of material means and their stocks, the norms of accumulation, maintenance and separation of rockets and ammunition;

organization of technical equipment, production capabilities and placement of military repair units on the ground;

purpose, technical data and equipment of mobile means of maintenance and repair and the procedure for their deployment (curtailment);

organizational and staff structure of the repair units of the Ground Forces;

the procedure for organizing the protection, protection and defence of the repair units in combat conditions;

the procedure for managing a repair unit in combat conditions;

the process of military decision-making process in the NATO Armed Forces;

the procedure for organizing the technical support of the military unit during the preparation for the and during of the battle, (redeployment) of troops.

be able to:

to develop combat documents for the provision of weapons of destruction and artillery and technical support of the military unit and to find solutions for the provision of appropriate material and technical means;

to use theoretical knowledge of the principles, nature of modern combined arms combat (tactical actions) during the preparation and execution of tasks of technical support of units and subdivisions;

be aware of the task received and assess the tactical situation in terms of technical support and reproduce the results of the assessment on a topographic map;

plan, organize and control the restoration and maintenance of weapons, close combat equipment and reconnaissance;

organize technical inspection of ammunition and routine work with rockets;

organize protection, protection and defence, engineering arrangement and camouflage of the area of deployment of the repair unit.

Organizational and methodological guidelines:

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

To achieve the main goal of training, the programme provides for the following forms of training:

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

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

an individual form of learning, when students perform tasks sequentially, one after another.

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

verbal and visual;

Training;

situational-cognitive.

Verbal and visual method, in which the teacher systematically and consistently proves the educational material, showing (demonstrating) the subjects studied in order for students to gain new knowledge and form the appropriate imagination.

The training (reproductive) method is in the performance of complex actions in accordance with the algorithm determined by the head of the lesson (pre-established order) to form the necessary skills and ensure the coherence of military-organizational structures.

Situational and cognitive – in reviewing and discussing real (probable) actions, getting acquainted with the experience of managing troops (forces) in military conflicts and developing skills in information and analytical activities.

The above methods provide students with knowledge, skills, and abilities, but to develop their creative abilities, the leader of the lesson must use the methods of problem-based learning.

Problem-based teaching is when the leader of the lesson puts a problem in front of the students, solves it himself, but at the same time shows the ways to solve it, reveals the course of his thought. The direct result of problem-based teaching should be the

student's assimilation of the method and logic of solving a specific problem, but without the ability to apply them independently. This method teaches students how to search for knowledge, with its help they gain creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to independent problem solving by pre-training them to perform individual elements of the solution. It is used during group exercises, when the method of finding the optimal solution is determined by the leader of the lesson, but the student himself finds the solution.

Problem methods provide deep assimilation of knowledge at the level of their creative application, mastering the methods of creative thinking, experience of practical activity.

during lectures:

Lecture is the main type of training sessions designed to assimilate the theoretical material of the topic.

The main purpose of the lecture is to consider the systematized foundations of scientific knowledge and practical experience on the topic, the state and prospects for the development of management science, theory and practice of managerial activity of the military leader, to focus on the most complex and key issues of the educational material. The lecture should be problematic in nature, stimulate active cognitive activity of students, and contribute to the formation of creative thinking in them. To intensify the cognitive activity of military personnel and form their creative thinking during lectures, it is skillful to use technical means of teaching in combination with active forms and methods of teaching lectures. Classes should be conducted by the method of oral presentation of educational material, individual questions and educational elements should be worked out in the form of a dialogue between the teacher and those who are students, and by posing problematic questions to them.

during group classes:

A group lesson is a type of training session during which the teacher presents new educational material by verbal and visual method, controls the assimilation of this material by students through a survey and contributes to its consolidation.

Group classes are held in order for students to study in detail the issues and problems discussed at the lectures, and to consider in detail topical issues of the educational material. The main teaching methods in this case are explanations with demonstration and conversation in the form of a discussion. To ensure clarity during classes, it is necessary to use technical means of transmitting information, tables, diagrams, slides, filmstrips and posters.

during practical classes:

A practical lesson is a type of training session during which the teacher organizes the assimilation of the theoretical provisions of the topic through individual performance of specially designed tasks and contributes to the formation of skills and abilities in them for the practical application of these theoretical provisions.

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

during the organization of independent work:

To carry out independent work in order to work out and assimilate the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for subsequent classes and control activities; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge in students.

To provide independent work with educational literature, teaching aids, tasks and methodological recommendations. All educational and methodological materials of classes must have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Logistics:

Classes should be held in specialized classrooms, which should be equipped with personal electronic and computer equipment at the rate of one workplace for two students and the training ground of the centre for supporting the educational process. Be sure to use technical means of teaching during training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".
2. The Doctrine of the Power of Logistics. MGP 4-32(41).01.
3. Doctrine of the Use of Logistics Forces. MGP 4-32(03).01.
4. Doctrine United Logistics OS 4-00(30)03.01.
5. Doctrine of Logistic Support of the Ground Forces of the Armed Forces of Ukraine MGP 4-00(11).01.
6. Doctrine Provision of Material and Technical Means, Works and Services of the MGP 4-179(03).01.
7. Doctrine on the organization of movements and transportation (transportation) in the Armed Forces of Ukraine MGP 4-00(03).01.
8. Combat Statute Logistics of the Ground Forces of the Armed Forces of Ukraine (tactical level) BP 4-32(11).01.
9. Combat Statute Logistics Operations of the Armed Forces of Ukraine (tactical level) BP 4-146(11).01.
10. Combat Statute of Operations for the Deployment of Troops (Tactical Level) BP 4-147(11).01.
11. Instruction on combat training of the Logistics Forces of the Armed Forces of Ukraine DMGP 7-00(41).01.
12. Instruction on the organization of tactical (command and staff) exercises in the Armed Forces of Ukraine (Brigade (regiment), battalion, company and their levels) DMGP 7-00(174)03.01. Kyiv Main Preparation Department of the General Staff.

13. Instruction Separate Repair and Restoration Regiment VKDP 4-99(55).01

14. Basic provisions of logistic support of the Armed Forces of Ukraine: approved by the Order of the Ministry of Defence of Ukraine dated 11.10.2016, No 522.

15. Regulations on military transportation by rail, sea, river and air transport: approved by the order of the Ministry of Defence of Ukraine dated 05.09.2013 No. 595.

16. Procedure for registration of operational (combat) documents: approved by the order of the General Staff of the Armed Forces of Ukraine dated 25.04.2020 No. 140.

17. Analysis of technical support of actions of units during the anti-terrorist operation. Kyiv: Armament of the Armed Forces of Ukraine, 2014.

18. Norms of accumulation, maintenance and separation of indestructible stocks of rockets and ammunition in the Armed Forces of Ukraine in peacetime. by the order of the Armed Forces of Ukraine dated 15.07.2008.

19. Norms of irreversible losses, returning of weapons and military equipment for repair, expenditure of other material means in the operations of the Armed Forces of Ukraine. Approved by the order of the Chief of General Staff – Commander in Chief of the Armed Forces of Ukraine dated 26.01.2016.

20. Military Directory "Classes of Supply of Logistics of the Armed Forces of NATO Member States" Airborne Forces 01.300.001-2016 (01).

21. Collection of combat kits and norms of military reserves of rockets and ammunition in the Armed Forces of Ukraine. by the order of the CLF of the Armed Forces of Ukraine dated 27.05.2003.

22. Demyanchuk B.O., Malyshkin O.V. Basics of Technical Support. Justification of decisions: teaching. Manual. Odesa: MA, 2013. 250 p. (in Russian).

23. Demyanchuk B.O., Golovan V.G., Honcharuk A.A., Nikul S.O., Malyshkin O.V. Fundamentals of Technical Support. Actions of the Rocket and Artillery Weapons Service. Manual. Odesa: MA, 2014. 280 p. (in Russian).

24. Planning of logistical support of military units (units) according to NATO standardized operating procedures. Kyiv. NUOU.

25. Shumkov I., Rudynskyi V., Pikus D., Bondarenko A. Troop Control Procedure (TLP). Textbook Odesa. MA. 97 p. (in Russian).

26. Dachkovskyi V.O., Ovcharenko I.V., Yaroshenko O.V. Fundamentals of evacuation of weapons and military equipment. Manual. Kyiv: NUDU. Ivan Chernyakhovsky, 2017. 180 p. (in Russian).

27. The use of units and military units of technical support. Part I: Units of Technical Support. Manual. / Ovcharenko I.V. et al.; per row. Kopashinsky S.A. Kyiv: NUOU. Ivan Chernyakhovsky, 2017. 136 p. (in Russian).

28. The use of units and military units of technical support. Part II: Repair and Restoration of the Military Unit: Manual. Manual. / Ovcharenko I.V. Kopashinsky S.A. Kyiv: NUDU. Ivan Chernyakhovsky, 2018. 80 p. (in Russian).

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 Rocket 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/.

Names of topics and distribution of study time by types of educational classes

No	Types of educational Classes control measures	Total hours	Of these:		Topic title and learning questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
		38	**24**	**14**	**Topic 1. Logistics support of the Armed Forces of Ukraine.**
1.	Lecture	2	2		**Lesson 1. Entry.** 1. The purpose and objectives of the discipline. The role and place of discipline in the training system of preparation of logistician. 2. General provisions of logistics support within the Armed Forces of Ukraine.
2.	Group session	2	2		**Lesson 2. Basics of logistics support.** 1. The essence and content of logistical support of troops (forces). 2. The Command of logistic forces. 3. Main Department of Logistic.
3.	Group session	2	2	2	**Lesson 3. Functions of logistic support.** 1. Guiding documents on the organization of logistic support. 2. Functions of logistic support. Independent work 1. Doctrines on logistics support. 2. Combat statute of logistics support.
4.	Group session	2	2	2	**Lesson 4. Logistical support for the troops activities.** 1. The system of logistics support within the Armed Forces of Ukraine. 2. Tasks of logistic support of the Armed Forces of Ukraine. Independent work 1. Goals and principles of the use of logistic forces. 2. Tasks of logistics forces during their application. 3. The procedure for the use of logistic forces.
5.	Group session	2	2	2	**Lesson 5. System of providing material and technical means, works and services.** 1. System of supply of material and technical means. 2. Distribution of tasks with the provision of material and technical means, works and services.

					Independent work 1. Features of providing material and technical means, works and services during various types of combat.
6.	Group session	2	2	2	**Lesson 6. System of technical support of troops activities.** 1. General information about the system of supplying of troops activities. 2. The concept of the system of technical support of troops activities. Independent work 1. Characteristics of the tasks of preparation of supplying combat operations. 2. Planning of technical support of combat operations. 3. Organization of technical support of combat operations.
7.	Group session	2	2	2	**Lesson 7. Support services in the system of technical support of troops activities.** 1. The role, place of support services in the system of technical support of troops activities. 2. Accounting and supply units. Independent work 1. Structures of support services in the system of technical support of troops activities. 2. Tasks of support services in the system of technical support of military activities.
8.	Group session	2	2		**Lesson 8. Norms for the accumulation, maintenance and separation of rockets and ammunition.** 1. Material means and their reserves. 2. Norms for the accumulation and maintenance of rockets and ammunition. 3. Separation of missiles and ammunition.
9.	Group session	2	2	2	**Lesson 9. Provision of troops with weapons and military equipment, rockets and ammunition, military-technical property.** 1. The procedure for equipment troops of armament and military equipment (AME), rockets and ammunition (RA), military-technical property (MTP). 2. The procedure for manning troops of military equipment, RA, MTP. Independent work 1. Planning the provision of troops with weapons and military equipment, RA, MTP. Initial data for planning. 2. The procedure for requesting weapons and military equipment, RA, MTP (the procedure for drawing up an application).
10.	Practical session	4	4	2	**Lesson 10. Equipping troops with armament and military equipment, missiles and ammunition, military-technical property (MTP).** 1. The procedure for equipment troops of armament and military equipment (AME), rockets and ammunition (RA), military-technical property (MTP). 2. The procedure for equipment troops of RA. Independent work

					1. Doctrines of logistics support 2. Organization of logistical support of troops.
11.	Seminar	2	2		**Lesson 11. Basics of logistical support of the troops (forces).** 1. The essence and content of logistical support of troops (forces). 2. System of providing material and technical means. 3. System of technical support for the actions of troops.
		56	**38**	**18**	**Topic 2. Military repair units.**
12.	Lecture	2	2	2	**Lesson 1. Military repair units.** 1. Repair platoon, RAA company. Purpose, tasks, capabilities and organizational and staff structure. 2. Repair and restoration battalion. Purpose, tasks, capabilities and organizational and staff structure. 3. Separate repair and restoration regiment. Purpose, tasks, capabilities and organizational and staff structure. Independent work 1. Logistics Battalion. Purpose, tasks, organizational and staff structure. 2. Material support battalion. Purpose, tasks, organizational and staff structure.
13.	Group session	2	2	2	**Lesson 2. Movable Maintenance and Repair Facilities.** 1. Purpose and composition of field repair shops MRS-AR, MRM-M1, MRS-OR, TA-5(6), ADB-309, ESB-4VS. 2. Purpose and composition of field repair shops OE, OP, N-1L. 3. Purpose of control and inspection machines. Independent work 1. Purpose and composition of the MTO-V workshop. 2. Purpose and composition of the MRTS workshop.
14.	Group session	6	6		**Lesson 3. Operation of maintenance and repair facilities.** 1. Preparation and operation of winch and boom crane. 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	2	2	2	**Lesson 4. Symbols used in documents on logistics support.** 1. General requirements for symbols. 2. Symbols, in operational documents on logistics support. Independent work 1. Order of the Chief in Command of the Armed Forces of Ukraine dated 11.09.2020 No. 140.
16.	Group	2	2	2	**Lesson 5. Temporary technical support bodies.**

	session				1. Temporary technical support bodies. Concept, classification. 2. Composition, tasks and symbols of temporary technical support bodies. Independent work 1. Specifics of the work of temporary technical support bodies. 2. Practical work of temporary technical support bodies.
17.	Group session	2	2	2	**Lesson 6. Organization of evacuation of armament and military equipment.** 1. Basic concepts of evacuation of armament and military equipment. 2. Purpose, characteristics of evacuation vehicles. Independent work 1. Features of evacuation of various types of armament and military equipment. 2. Evacuation of weapons and military equipment in difficult conditions.
18.	Group session	2	2		**Lesson 7. Tasks of technical support units in combat conditions.** 1. The main tasks of technical support that repair units solve in combat conditions. 2. Organization of maintenance and restoration of armament and military equipment. 3. The procedure for the transfer of armament and military equipment that are not covered by repairs in a military unit. 4. The procedure for handing over the repair fund.
19.	Group session	2	2		**Lesson 8. Protection, protection and defence of repair units and their management in combat conditions.** 1. Organization of protection and special treatment of personnel, weapons and military equipment of repair units. 2. Protection, defence, engineering arrangement and camouflage of the area where repair units are located.
20.	Practical session	4	4	4	**Lesson 9. Working out a plan for the protection and defence of repair units.** 1. Development of a scheme for the deployment of DVCP (Damaged Vehicles Collection Point). 2. Development of a plan for the protection and defence of DVCP. 3. Management of the repair unit in combat conditions. Independent work 1. Finalization of DVCP scheme. 2. Finalization of the plan for the protection and defence of DVCP.
21.	Practical session	6	6		**Lesson 10. Deployment of DVCP elements.** 1. Organization and implementation of the deployment of the DVCP. 2. Deployment of elements of the DVCP in a certain area.

					3. Folding of the elements of the DVCP.
22.	Group session	2	2	4	**Lesson 11. Working out technical documentation.** 1. The procedure for filling out passports (forms). 2. Filling out repair reporting documents. Independent work 1. Military repair units of the unit. 2. The work of the commander of the repair unit during hostilities. 3. Symbols of logistics support.
23.	Seminar	4	4		**Lesson 12. Repair bodies of the unit.** 1. Organizational staffing structure of technical and logistic support units. 2. The work of the commander of the repair unit in various types of combat.
Control measures		2	2		Differential Test.
		24	**16**	**8**	**Topic 3. The work of the commander of the repair unit, NATO military decision-making process.**
24.	Lecture	2	2		**Lesson 1. Military decision-making process in the NATO Armed Forces.** 1. Troop leading procedures (TLP). General provisions of the TLP. 2. Receiving a task. (Step 1). 3. Giving the previous order to WARNO (Step 2).
25.	Group session	2	2	2	**Lesson 2. Algorithm of the commander's work on unit management.** 1. Development of a preliminary action plan (Step 3). 2. Start of movement (Step 4). Independent work 1. Detailed analysis of the METT-TC mission (Step 3a). 2. Risk assessment and elaboration of key points. (Step 3 c). 3. Development and selection of actions (Steps 3b, 3d).
26.	Group session	2	2	2	**Lesson 3. Algorithm of the commander's work on unit management.** 1. Conducting reconnaissance (Step 5). 2. Completion of the development of the plan (Step 6). 3. Recoil of the OPORD, operational order (Step 7). 4. Final inspection (Step 8). Independent work 1. Types, methods of working out orders. 2. Before combat checks and inspections.

27.	Practical session	4	4	4	**Lesson 4. Testing of TLP part 1.** 1. Issuance of an order. 2. Performing 1,2,3 steps of the TLP. Independent work 1. Finalization of 1,2,3 steps of the TLP. 2. Refinement of the manoeuvre scheme.
28.	Practical session	6	6		**Lesson 5. TLP Part 2.** 1. Implementation of 4,5,6,7 steps of the TLP. 2. Control, verification, improvement.
		32	**22**	**10**	**Topic 4. Organization of technical support of a military unit during the preparation and deployment into the combat activities.**
29.	Lecture	2	2	2	**Lesson 1. Organization of the work of the commander of the repair unit in preparation for combat activities.** 1. The sequence of work of the commander of the repair unit in preparation for combat activities. 2. Preparation of combat, planning and accounting documents. Independent work 1. Understanding of the task by the commander of the repair unit. 2. Giving WARNO's (Warning Orders) and conducting the time estimate. 3. Assessment of the situation and taking decision.
30.	Group session	2	2		**Lesson 2. General requirements for the transportation of troops.** 1. Basic requirements for the transportation of troops. 2. Calculations of transportation and loading neds of troops.
31.	Group session	2	2	2	**Lesson 3. Organization of technical support during the movement of troops.** 1. Features of technical support during preparation for movement. 2. Features of technical support of movement of troops by its own power. 3. Features of technical support during the combined type of movement of troops. Independent work 1. Actions of forces and means of technical support during the preparation and during the movement of troops.
32.	Group session	2	2		**Lesson 4. The work of the commander of the repair unit during the preparation and during the defence.** 1. The content of technical support measures in preparation for defence.

					2. The sequence of work of the commander of the repair unit during the preparation and during the defence.
33.	Group session	2	2	2	**Lesson 5. The work of the commander of the repair unit in preparation and during the offensive.** 1. The content of technical support measures in preparation for the offensive. 2. Actions of forces and means of technical support during the offensive. Independent work 1. Features of technical support of the unit during the defence in the city. 2. Features of the technical support of the unit during the offensive battle in the city.
34.	Group session	2	2		**Lesson 6. Peculiarities of the use of repair bodies during the fight against illegal armed groups (in the ATO/JFO).** 1. Features of the use of repair bodies in various types of combat (on the march). 2. Particularities of the use of repair bodies during the fight against illegal armed groups (in the ATO/JFO).
35.	Seminar	4	4	4	**Lesson 7. The use of repair bodies in various types of combat (on the march), during the fight against illegal armed groups (in the ATO/JFO).** 1. Organization of technical support during the movement of troops. 2. The work of the commander of the repair unit during the preparation and during the defence. 3. The work of the commander of the repair unit during the preparation and during the offensive. 4. The use of repair bodies during the fight against illegal armed groups (in the ATO/JFO). Independent work 1. Preparation for the exam.
Control measures		6	6		Exam
Total per discipline		**150**	**100**	**50**	

Organization of provision and maintenance of RAA (Rockets and Artillery Armament) in units of a military formation.

Based on the results of studying the academic discipline, the student of the courses must
know:

the main provisions of the governing documents on accounting, write-off, categorization and storage of RAA;
the procedure for accounting and reporting, write-off of material assets of the relevant RAA nomenclature;
the procedure for the operation and storage of RAA, artillery and technical property;
the procedure for organizing the safe operation of RAA.

Be able to:

organize high-quality accounting and reporting of material assets of the relevant RAA nomenclature;
to organize high-quality storage and timely issuance of material means of the RAA nomenclature;
organize high-quality categorization and write-off of material assets of the relevant RAA nomenclature;
organize and methodically correctly train the personnel of the repair unit for the operation of RAA,
to plan, organize and control the restoration and maintenance of samples of RAA.

Organizational and methodological guidelines:

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

To achieve the main goal of training, the programme provides for the following forms of training:

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

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

an individual form of learning, when students perform tasks sequentially, one after another.

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

verbal and visual;

Training;

situational-cognitive.

Verbal and visual method, in which the teacher systematically and consistently proves the educational material, showing (demonstrating) the subjects studied in order for students to gain new knowledge and form the appropriate imagination.

The training (reproductive) method is in the performance of complex actions in accordance with the algorithm determined by the head of the lesson (pre-established order) to form the necessary skills and ensure the coherence of military-organizational structures.

Situational and cognitive – in reviewing and discussing real (probable) actions, getting acquainted with the experience of managing troops (forces) in military conflicts and developing skills in information and analytical activities.

The above methods provide students with knowledge, skills, and abilities, but to develop their creative abilities, the leader of the lesson must use the methods of problem-based learning.

Problem-based teaching is when the leader of the lesson puts a problem in front of the students, solves it himself, but at the same time shows the ways to solve it, reveals the course of his thought. The direct result of problem-based teaching should be the student's assimilation of the method and logic of solving a specific problem, but without the ability to apply them independently. This method teaches students how to search for knowledge, with its help they gain creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to independent problem solving by pre-training them to perform individual elements of the solution. It is used during group exercises, when the method of finding the optimal solution is determined by the leader of the lesson, but the student himself finds the solution.

Problem methods provide deep assimilation of knowledge at the level of their creative application, mastering the methods of creative thinking, experience of practical activity.

during lectures:

Lecture is the main type of training sessions designed to assimilate the theoretical material of the topic.

The main purpose of the lecture is to consider the systematized foundations of scientific knowledge and practical experience on the topic, the state and prospects for the development of management science, theory and practice of managerial activity of the military leader, to focus on the most complex and key issues of the educational material. The lecture should be problematic in nature, stimulate active cognitive activity of students, and contribute to the formation of creative thinking in them. To intensify the cognitive activity of military personnel and form their creative thinking during lectures, it is skilful to use technical means of teaching in combination with active forms and methods of teaching lectures. Classes should be conducted by the method of oral presentation of educational material, individual questions and educational elements should be worked out in the form of a dialogue between the teacher and those who are students, and by posing problematic questions to them.

during group classes:

A group lesson is a type of training session during which the teacher presents new educational material by verbal and visual method, controls the assimilation of this material by students through a survey and contributes to its consolidation.

Group classes are held in order for students to study in detail the issues and problems discussed at the lectures, and to consider in detail topical issues of the educational material. The main teaching methods in this case are explanations with demonstration and conversation in the form of a discussion. To ensure clarity during classes, it is necessary to use technical means of transmitting information, tables, diagrams, slides, filmstrips and posters.

during practical classes:

A practical lesson is a type of training session during which the teacher organizes the assimilation of the theoretical provisions of the topic through individual performance of specially designed tasks and contributes to the formation of skills and abilities in them for the practical application of these theoretical provisions.

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

during the organization of independent work:

To carry out independent work in order to work out and assimilate the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for subsequent classes and control activities; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge in students.

To provide independent work with educational literature, teaching aids, tasks and methodological recommendations. All educational and methodological materials of classes must have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Logistics:

Classes should be held in specialized classrooms, which should be equipped with personal electronic and computer equipment at the rate of one workplace for two students and the training ground of the centre for supporting the educational process. Be sure to use technical means of teaching during training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".
2. The Doctrine of the Power of Logistics. MGP 4-32(41).01.

3. Doctrine of the Use of Logistics Forces. MGP 4-32(03).01.
4. Doctrine United Logistics OS 4-00(30)03.01.
5. Doctrine of Logistic Support of the Ground Forces of the Armed Forces of Ukraine MGP 4-00(11).01.
6. Doctrine Provision of Material and Technical Means, Works and Services of the MGP 4-179(03).01.
7. Doctrine on the organization of movements and transportation (transportation) in the Armed Forces of Ukraine MGP 4-00(03).01.
8. Combat Statute Logistics of the Ground Forces of the Armed Forces of Ukraine (tactical level) BP 4-32(11).01.
9. Combat Statute Logistics Operations of the Armed Forces of Ukraine (tactical level) BP 4-146(11).01.
10. Combat Statute of Operations for the Deployment of Troops (Tactical Level) BP 4-147(11).01.
11. Instruction on combat training of the Logistics Forces of the Armed Forces of Ukraine DMGP 7-00(41).01.
12. Instruction on the organization of tactical (command and staff) exercises in the Armed Forces of Ukraine (Brigade (regiment), battalion, company and their levels) DMGP 7-00(174)03.01. Kyiv Main Preparation Department of the General Staff.
13. Instruction Separate Repair and Restoration Regiment VKDP 4-99(55).01
14. Basic provisions of logistic support of the Armed Forces of Ukraine: approved by the Order of the Ministry of Defence of Ukraine dated 11.10.2016, No 522.
15. Regulations on military transportation by rail, sea, river and air transport: approved by the order of the Ministry of Defence of Ukraine dated 05.09.2013 No. 595.
16. Procedure for registration of operational (combat) documents: approved by the order of the General Staff of the Armed Forces of Ukraine dated 25.04.2020 No. 140.
17. Analysis of technical support of actions of units during the anti-terrorist operation. Kyiv: Armament of the Armed Forces of Ukraine, 2014.
18. Norms of accumulation, maintenance and separation of indestructible stocks of missiles and ammunition in the Armed Forces of Ukraine in peacetime. by the order of the Armed Forces of Ukraine dated 15.07.2008.
19. Norms of irreversible losses, returning of weapons and military equipment for repair, expenditure of other material means in the operations of the Armed Forces of Ukraine. Approved by the order of the Chief of General Staff – Commander in Chief of the Armed Forces of Ukraine dated 26.01.2016.
20. Military Directory "Classes of Supply of Logistics of the Armed Forces of NATO Member States" Airborne Forces 01.300.001-2016 (01).
21. Collection of combat kits and norms of military reserves of missiles and ammunition in the Armed Forces of Ukraine. by the order of the CLF of the Armed Forces of Ukraine dated 27.05.2003.

22. Demyanchuk B.O., Malyshkin O.V. Basics of Technical Support. Justification of decisions: teaching. Manual. Odesa: MA, 2013. 250 p. (in Russian).

23. Demyanchuk B.O., Golovan V.G., Honcharuk A.A., Nikul S.O., Malyshkin O.V. Fundamentals of Technical Support. Actions of the Rocket and Artillery Weapons Service. Manual. Odesa: MA, 2014. 280 p. (in Russian).

24. Planning of logistical support of military units (units) according to NATO standardized operating procedures. Kyiv. NUOU.

25. Shumkov I., Rudynskyi V., Pikus D., Bondarenko A. Troop Control Procedure (TLP). Textbook Odesa. MA. 97 p. (in Russian).

26. Dachkovskyi V.O., Ovcharenko I.V., Yaroshenko O.V. Fundamentals of evacuation of weapons and military equipment. Manual. Kyiv: NUDU. Ivan Chernyakhovsky, 2017. 180 p. (in Russian).

27. The use of units and military units of technical support. Part I: Units of Technical Support. Manual. / Ovcharenko I.V. et al.; per row. Kopashinsky S.A. Kyiv: NUOU. Ivan Chernyakhovsky, 2017. 136 p. (in Russian).

28. The use of units and military units of technical support. Part II: Repair and Restoration of the Military Unit: Manual. Manual. / Ovcharenko I.V. Kopashinsky S.A. Kyiv: NUDU. Ivan Chernyakhovsky, 2018. 80 p. (in Russian).

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 Rocket and Artillery Weapons (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/.

Names of topics and distribution of study time by types of educational classes.

No	Types of educational Classes control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
		32	**20**	**12**	**Topic 1. General provisions on the organization of the operation of RAA.**
1.	Lecture	2	2		**Lesson 1. Basics of logistics support.** 1. The purpose and objectives of studying the discipline. Its role and place in the system of training a RAA specialist. 2. General provisions of logistical support of the Armed Forces of Ukraine and the organizational and staff structure of the armament support services of the military unit. 3. The main guiding documents that regulate the activities of support services.
2.	Lecture	2	2		**Lesson 2. Basics of the theory of operation of RAA.** 1. Basic concepts and definitions of RAA. 2. Basic concepts and definitions of the operation of RAA. 3. Basic concepts of the organization of the operation of RAA.
3.	Group session	2	2	2	**Lesson 3. Introduction into the operation of RAA.** 1. The procedure of takeover and handover of RAA. 2. Commissioning of MAA into operation. 3. Admission of personnel to the operation with RAA. Independent work 1. The procedure for working out the list of admission of personnel to work at RAA warehouses.
4.	Group session	2	2		**Lesson 4. Basics of the theory of maintenance and repair of weapons and military equipment.** 1. Purpose, tasks, types and methods of maintenance of WME (weapons and military equipment). 2. Purpose, tasks, types and methods of repair of WME (weapons and military equipment).
5.	Group	2	2		**Lesson 5. Means of RAA.**

	session				1. General characteristics of RAA operating facilities. 2. Purpose and classification of SPT (spare parts and tools). 3. Operational documentation and the procedure for its maintenance.
6.	Practical session	2	2	3	**Lesson 6. The procedure for maintaining operational documentation.** 1. The procedure for filling out forms for armament. 2. The procedure for filling out passports for MTM (Military technical material). Independent work 1. Transportation of RAA by road. 2. Transportation of RAA by rail. 3. Transportation of RAA by sea (river) and air.
7.	Group session	2	2	3	**Lesson 7. Safety measures during the operation of RAA in troops.** 1. Design and operational measures to ensure the safe operation of weapons. 2. Safety measures when handling weapons during their use and during maintenance. Independent work 1. Lightning protection of places of preservation. 2. Requirements proposed for the installation and operation of lightning protection.
8.	Group session	2	2	2	**Lesson 8. Organization of safe operation of technical means.** 1. Organization of safe operation of boiler supervision facilities. 2. Organization of safe operation of electrical installations, protective equipment. 3. Organization of safe operation of hoses of high and low pressure. Independent work 1. Safety measures when handling ammunition when working in storage facilities, and carrying out loading and unloading operations. 2. Safety measures when handling ammunition at firing positions. 3. The procedure for working with ammunition that is dangerous to handle.
9.	Group session	2	2	2	**Lesson 9. Organization of fire safety in a military unit.** 1. General provisions for the organization of fire safety. 2. Special fire safety requirements for arsenals, bases and warehouses for storing missiles, artillery and engineering ammunition, aviation weapons, explosives 3. Special fire safety requirements for weapons and military equipment parks. Independent work 1. Sources of contaminated waste generation. 2. Requirements for the protection of the environment during the use of weapons and equipment.

Control measures		2	2		Differential Test
		9	**6**	**3**	**Topic 2. Organization of storage of weapons and ammunition in units of a military formation.**
10.	Group session	2	2	3	**Lesson 1. Organization of storage of ammunition and hand grenades in units of a military formation.** 1. Ammunition storage sites. 2. Requirements for the opening (closing) of warehouses and premises for the repair of small arms. Independent work 1. General provisions of the Instruction on the organization 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 June 29, 2005 No. 359.
11.	Group session	2	2		**Lesson 2. Features of the organization of acceptance and issuance of ammunition and hand grenades at arsenals, bases and warehouses.** 1. Issuance of ammunition and hand grenades. 2. Registration of acceptance of ammunition and hand grenades.
12.	Practical session	2	2		**Lesson 3. Peculiarities of the organization of acceptance and issuance 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. Organization of RAA storage during hostilities.**
13.	Group session	2	2	3	**Lesson 1. Organization of storage of rockets and ammunition during combat activities.** 1. General provisions on the organization of storage of rockets and ammunition during combat activities. 2 Placement of artillery warehouse for RAA. 3. The procedure for storing missiles and ammunition at company ammunition supply points during hostilities. Independent work 1. Specifics 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 activities.** 1. Specifics of storage of small arms during combat activities. 2. Specifics of storage of small arms at company ammunition supply site during combat activities.
		16	**10**	**6**	**Topic 4. Organization of RAA categorization.**

15.	Group session	2	2		**Lesson 1. General provisions on the organization of RAA categorization.** 1. General information on the categorization of RAA. 2. Categorization of small arms.
16.	Group session	2	2	3	**Lesson 2. General provisions on the organization of categorization of rockets, ammunition and spare parts for them.** 1. Categorization of ammunition. 2. Categorization of missiles and spare parts for them. Independent work 1. General provisions of the Instruction on the procedure for categorization of rocket and artillery weapons, order of the Ministry of Defence of Ukraine dated 04.01.2019 No. 4.
17.	Practical session	2	2		**Lesson 3. Transfer of rockets and ammunition from one category to another.** 1. Drawing up a technical condition report for the transfer of rockets from one category to another. 2. Drawing up an act of quality (technical condition) for the transfer of ammunition from one category to another.
18.	Group session	2	2	3	**Lesson 4. The procedure for transferring and registering RAA 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. Categorization of equipment for repair and operation of RAA. 2. Categorization of batteries.
19.	Practical session	2	2		**Lesson 5. Transfer of RAA from one category to another.** 1. Drawing up an act of technical condition for the transfer of small arms from one category to another. 2. Transfer of military-technical property of the MAA nomenclature from one category to another.
		38	**26**	**12**	**Topic 5. Accounting of RAA in units of a military formation**
20.	Group session	2	2		**Lesson 1. Organization of accounting of military property in units of a military formation.** 1. Organization of RAA accounting in the units of the military formation. 2. Specifics of the organization of RAA accounting in the repair units of the military formation.
21.	Group session	2	2	3	**Lesson 2. General provisions for the organization of accounting for military property.** 1. General provisions on the organization of RAA accounting in a military unit. 2. Types of administrative accounting documents.

					3. Types of primary accounting documents. 4. Types of accounting registers (books and accounting cards). Independent work 1. General Provisions of the Instruction on Accounting of Military Property in the Armed Forces of Ukraine (Order of the Ministry of Defence of Ukraine dated 17.08.2017 No. 440).
22.	Group Session	2	2	3	**Lesson 3. The procedure for drawing up primary accounting documents that are kept in the units of the military formation.** 1. The procedure for issuing an invoice for the issuance (delivery) of military property in a military unit. 2. The procedure for drawing up an act of take over and hand over of military property. Independent work 1. Types of supporting accounting documents. 2. The procedure for drawing up supporting accounting documents.
23.	Group Session	2	2		**Lesson 4. The procedure for drawing up accounting documents that are kept in the units of the military formation.** 1. The procedure for registration of accounting registers (books and accounting cards) kept in the units of the military formation. 2. The procedure for drawing up administrative and supporting accounting documents kept in the units of the military unit.
24.	Practical Session	4	4	3	**Lesson 5. Registration of primary accounting documents that are kept in the units of the military formation.** 1. Registration of an invoice for the issuance (delivery) of military property in a military unit. 2. Execution of the act of hand over and take over of military property. Independent work 1. Specifics of accounting of RAA, equipment and property. Section 15 of the Order of the Ministry of Defence of Ukraine of 17.08.17, No 440.
25.	Practical Session	4	4		**Lesson 6. Registration of accounting documents that are kept in the units of the military formation.** 1. Registration of the book of registration and movement of accounting documents. 2. Registration of the book of accounting of availability and movement of military property (warehouse, unit). 3. Registration of the accounting book by individual weapon assignment, military equipment and

					other military property.
26.	Group Session	2	2		**Lesson 7. Organization of accounting of missiles and ammunition during exercises, practical firing in units of a military formation**. 1. Accounting of missiles and ammunition during exercises, practical firing in units of a military formation. 2. The procedure for drawing up registration documents for the issuance of missiles and ammunition for exercises, practical firing in units of a military formation.
27.	Practical Session	4	4	3	**Lesson 8. Registration of primary, administrative and supporting accounting documents that are kept in the units of the military formation.** 1. Preparation of a covering letter for the transportation of military property. 2. Preparation of the act of loading of ammunition in a combat vehicle. 3. Preparation of trip ticket. Independent work 1. Specifics of accounting of the property which is received as an international aid, from volunteer organizations, as charitable or humanitarian aid. Section 12 of the Order of the Ministry of Defence of Ukraine of 17.08.17, No 440.
28.	Practical Session	4	4		**Lesson 9. Registration of primary, administrative and supporting accounting documentation that are kept during exercises, practical firing in units of a military formation.** 1. Registration of the distribution list of ammunition at the warehouse of the military unit. 2. Registration of ammunition handout at the combat supply point of the military unit.
		6	**4**	**2**	**Topic 6. Organization of accounting of military property during combat activities, participation in anti-terrorist operations, international operations to maintain peace and security.**
29.	Group Session	2	2	2	**Lesson 1. Accounting of military property in military units during combat activities.** 1. The procedure and features of accounting of military property in military units during combat activities. 2. Specifics of accounting of military property at military depots of troops (forces) conducting combat activities. Independent work 1. Specifics of accounting of military property in the support services of military command bodies of troops (forces) conducting combat activities.
30.	Group	2	2		**Lesson 2. Specifics of accounting of small arms, ammunition and hand grenades in units**

	Session				**conducting combat activities.** 1. The procedure for separation and accumulation of stocks of missiles and ammunition in units during combat activities. 2. Organization of accounting of small arms and ammunition in the brigade at company and platoon ammunition storage sites.
		16	**10**	**6**	**Topic 7. Organization of MAA write-off.**
31.	Group Session	2	2	3	**Lesson 1. Organization of write-off from the accounting of material assets in the Armed Forces of Ukraine.** 1. General provisions on the organization of write-off from the accounting of material assets in the Armed Forces of Ukraine. 2. Organization of write-off from the accounting of material assets in the Armed Forces of Ukraine. Independent work 1. General provisions on the procedure for writing off material and monetary assets from the Armed Forces of Ukraine (Order of the Ministry of Defence of Ukraine dated 29.03.2021, No. 81).
32.	Group Session	2	2		**Lesson 2. The procedure for writing off military property by acts.** 1. The procedure for writing off military property according to acts of qualitative (technical) condition. 2. The procedure for writing off military property by write-off acts.
33.	Group Session	2	2		**Lesson 3. The procedure for determining the carrying value of the property of the Armed Forces of Ukraine.** 1. The procedure for determining the carrying value of the property of the Armed Forces of Ukraine. 2. Procedure for assessing the carrying value of military property.
34.	Practical Session	2	2	3	**Lesson 4. Fulfilment of documents for write-off of material assets according to acts of qualitative (technical) condition.** 1. Fulfilment of documents for write-off of weapons and military equipment, according to the act of qualitative (technical) condition. 2. Fulfilment of documents for write-off of spare parts for small arms according to acts of qualitative (technical) condition. Independent work 1. Legislative and regulatory framework which are regulating the procedure for writing off jf

					military property on the basis of an inspector's certificate.
35.	Practical Session	2	2		**Lesson 5. Preparation of documents for write-off of weapons and ammunition packaging according to acts of qualitative (technical) condition.** 1. Registration of write-off from the registration of weapons and ammunition according to acts of qualitative (technical) condition. 2. Registration of write-off from the registration of weapons and ammunition containers according to acts of qualitative (technical) condition.
		6	**6**		**Topic 8. Organization and procedure of conducting an inventory of material assets.**
36.	Group Session	2	2		**Lesson 1. Inventory of material assets.** 1. Procedure of conducting an inventory of RAA material assets. 2. The procedure of conducting an inventory of small arms. 3. The procedure of conducting an inventory of means of destruction.
37.	Practical Session	4	4		**Lesson 2. Execution of documents for the inventory of material assets of RAA.** 1. Drawing up an inventory description of the inventory of small arms. 2. Preparation of an inventory description of ammunition inventory.
		20	**14**	**6**	**Topic 9. Organization of handover of the position by officials of the RAA department.**
38.	Group Session	2	2		**Lesson 1. The procedure of handing over of the positions by persons responsible for military (ship) economy.** 1. General provisions for the handover of the position. 2. Handover of the position by the commander of the unit. 3. Handover of the position by the commander of the armament repair platoon. Independent work 1. General Provisions on the Military (Ship) Economy of the Armed Forces of Ukraine: Order of the Ministry of Defence of Ukraine dated 16.07.1997 No. 300.
39.	Practical Session	4	4		**Lesson 2. Preparation of documents for the position of the position by officials.** 1. Preparation of the act of acceptance of the transfer of the position by the commander of the repair unit. 2. Preparation of the statement of the availability and quality condition of material resources.
40.	Practical Session	2	2	3	**Lesson 3. Preparation of documents for the acceptance of the transfer of weapons and military equipment by officials.** 1. Preparation of the act of technical condition during the reception of weapons and military equipment.

					2. Preparation of the incompleteness accounting card. Independent work. 3. Preparation for the exam.
Control measures		6	6		Exam
Total per discipline		**150**	**100**	**50**	

Design and Operation of Artillery Devices.

The general goal of the component of the educational programme:

Based on the results of studying the academic discipline, the student of the courses must

know:

the main provisions of the governing documents on the organization of maintenance and repair of artillery devices;

the procedure for keeping records and reporting, writing off material means used during the operation of artillery devices;

the structure of optical and optoelectronic artillery devices and their preparation for the performance of practical tasks in professional activities;

the procedure for the operation and storage of artillery devices;

the procedure for organizing and conducting maintenance of reconnaissance means;

physical phenomena and processes occurring in optical, optical-electrical devices, thermal imaging devices, electrical and electromechanical equipment;

content and methods of preparing samples of rocket and artillery weapons for their intended use.

be able to:

to organize high-quality accounting, storage, issuance and write-off of material assets of the relevant nomenclature;

plan, organize, control the restoration of artillery reconnaissance devices;

carrying out maintenance of artillery devices;

to navigate in modern trends in the development of optical and optical-electronic means of reconnaissance;

check artillery devices for operability, carry out calibrations (alignment) and check artillery reconnaissance devices;

use artillery devices only for their intended purpose and maintain them in good technical condition.

Organizational and methodological guidelines:

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

To achieve the main goal of training, the programme provides for the following forms of training:

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

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

an individual form of learning, when students perform tasks sequentially, one after another.

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

verbal and visual;

training;

situational-cognitive.

Verbal and visual method, in which the teacher systematically and consistently proves the educational material, showing (demonstrating) the subjects studied in order for students to gain new knowledge and form the appropriate imagination.

The training (reproductive) method is in the performance of complex actions in accordance with the algorithm determined by the head of the lesson (pre-established order) to form the necessary skills and ensure the coherence of military-organizational structures.

Situational and cognitive – in reviewing and discussing real (probable) actions, getting acquainted with the experience of managing troops (forces) in military conflicts and developing skills in information and analytical activities.

The above methods provide students with knowledge, skills, and abilities, but to develop their creative abilities, the leader of the lesson must use the methods of problem-based learning.

Problem-based teaching is when the leader of the lesson puts a problem in front of the students, solves it himself, but at the same time shows the ways to solve it, reveals the course of his thought. The direct result of problem-based teaching should be the student's assimilation of the method and logic of solving a specific problem, but without the ability to apply them independently. This method teaches students how to search for knowledge, with its help they gain creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to independent problem solving by pre-training them to perform individual elements of the solution. It is used during group exercises, when the method of finding the optimal solution is determined by the leader of the lesson, but the student himself finds the solution.

Problem methods provide deep assimilation of knowledge at the level of their creative application, mastering the methods of creative thinking, experience of practical activity.

during lectures:

Lecture is the main type of training sessions designed to assimilate the theoretical material of the topic.

The main purpose of the lecture is to consider the systematized foundations of scientific knowledge and practical experience on the topic, the state and prospects for the development of management science, theory and practice of managerial activity of the military leader, to focus on the most complex and key issues of the educational material. The lecture should be problematic in nature, stimulate active cognitive activity of students, and contribute to the formation of creative thinking in them. To intensify

the cognitive activity of military personnel and form their creative thinking during lectures, it is skilful to use technical means of teaching in combination with active forms and methods of teaching lectures. Classes should be conducted by the method of oral presentation of educational material, individual questions and educational elements should be worked out in the form of a dialogue between the teacher and those who are students, and by posing problematic questions to them.

when conducting group lessons:

A group lesson is a type of training session during which the teacher presents new educational material by verbal and visual method, controls the assimilation of this material by students through a survey and contributes to its consolidation.

Group classes are held in order for students to study in detail the issues and problems discussed at the lectures, and to consider in detail topical issues of the educational material. The main teaching methods in this case are explanations with demonstration and conversation in the form of a discussion. To ensure clarity during classes, it is necessary to use technical means of transmitting information, tables, diagrams, slides, filmstrips and posters.

during practical session:

A practical lesson is a type of training session during which the teacher organizes the assimilation of the theoretical provisions of the topic through individual performance of specially designed tasks and contributes to the formation of skills and abilities in them for the practical application of these theoretical provisions.

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

when organizing independent work:

To carry out independent work in order to work out and assimilate the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for subsequent classes and control activities; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge in students.

To provide independent work with educational literature, teaching aids, tasks and methodological recommendations. All educational and methodological materials of classes must have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Logistics:

Classes should be held in specialized classrooms, which should be equipped with samples of rocket and artillery weapons. Be sure to use technical means of teaching during training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".

2. Constitution of Ukraine. Basic law. – K., 1996 (with amendments) // Official Gazette of Ukraine dated 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 of 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 the Organization 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 the Categorization of Rocket and Artillery Weapons".
8. DSTU 2860-94. Reliability of equipment. Terms and definitions. 01.01.95 - Kyiv: Gosstandart of Ukraine, 1995.
9. Yu.G. Dushkin, Yu.A. Maksimenko, A.P. Chkalov, M.E. Galaktionov. Optical and optoelectronic means of reconnaissance. Odesa . VA-2020.
10. O.I. Kravchuk, A.O. Levchenko. Fundamentals of the structure of optical and optoelectronic means of military and special reconnaissance. Tutorial. Odesa . VA-2014
11. K.V. Salukvadze, V.G. Staroselets, V.N. Chukhnin. Theoretical foundations of the operation of artillery weapons.
12. Fundamentals of storage and renewal of combat capability of weapons.
13. A.S. Abdulin, K.V. Salukvadze, V.M. Shakhmametyev. Maintenance and repair of artillery weapons.
14. Manual for the operation of rocket and artillery weapons. Part 1, 2.
15. Chyzh 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.vaodesa.org.ua.
2. Electronic Library of the Military Academy (Odesa) (internal network). http://192.168.1.254/.
3. Electronic Library of the Department of Rocket and Artillery Weapons (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/.

Names of topics and distribution of study time by types of educational classes.

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
		34	**22**	**12**	**Chapter 1. Physical principles and basics of construction of artillery devices.**
		16	**12**	**4**	**Topic 1. Physical principles of construction of optical devices.**
1.	Lecture	2	2		**Lesson 1. Introduction.** 1. The subject of the discipline, its tasks, content and meaning. Relationship with other disciplines. 2. Classification of artillery devices, their staffing. 3. Incoming control.
2.	Group Session	2	2	1	**Lesson 2. Basics of the concept of optics.** 1. The main sections of optics. 2. Basic concepts of geometric optics. 3. Basic laws of geometric optics. Independent work 1. Optical glass production. 2. Properties of optical glass.
3.	Group Session	2	2		**Lesson 3. Details of optical instruments.** 1. Lenses. 2. Prisms.
4.	Group Session	2	2	1	**Lesson 4. Details of optical instruments.** 1. Meshes. 2. Light filters. Independent work 1. Development of mirrors. 2. Silvering and aluminization of mirrors.
5.	Group Session	2	2		**Lesson 5. Clarification and bonding of optical parts.** 1. Physical and chemical enlightenment. 2. Gluing optical parts.
6.	Group	2	2	2	**Lesson 6. Levels and scales.**

	Session				1. Levels. 2. Scales. Independent work 1. Loss of light.
		18	**10**	**8**	**Topic 2. Basics of building optical devices.**
7.	Lecture	2	2	2	**Lesson 1. Optical systems** 1. Types of optical systems. 2. 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	2	2	2	**Lesson 2. Main optical nodes.** 1. Lens. 2. Rotating system. 3. Eyepiece. Independent work 1. Physiology of the eye. 2. Properties of the eye.
9.	Group Session	2	2	2	**Lesson 3. Telescopic systems.** 1. Types of telescopic systems and their characteristics. 2. Galileo's telescopic system. 3. Kepler telescopic system. Independent work 1. Physiology of stereoscopic vision. 2. Properties of stereoscopic vision.
10.	Group Session	2	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 attaching optical parts.** 1. Methods of attaching optical parts.

					2. Modular control.
		56	**42**	**14**	**Chapter 2. Structure and operation of optical reconnaissance and aiming devices.**
		12	**8**	**4**	**Topic 3. Optical reconnaissance and observation 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	2	2	2	**Lesson 2. Binoculars.** 1. Purpose, performance characteristics, completeness of binoculars. 2. Structure and principle of operation. Independent work 1. Features of the structure of Bi-8 binoculars. 2. The principle of operation of Bi-8.
14.	Group Session	2	2	2	**Lesson 3. Periscope artillery aiming circle PAB-2AM.** 1. Purpose, performance characteristics, completeness of PAB-2AM. 2. Structure and principle of operation. 3. Optical circuit of PAB-2AM. Independent work 1. Working with binoculars. 2. Work with PAB-2AM.
15.	Practical Session	2	2		**Lesson 4. Work with binoculars and PAB-2AM.** 1. Working with binoculars. 2. Work with PAB-2AM.
		14	**10**	**4**	**Topic 4. Optical sights for small arms and grenade launchers.**
16.	Group Session	2	2		**Lesson 1. Optical sight PSO-1.** 1. Purpose, performance characteristics, completeness. 2. Structure and principle of operation. 3. Optical circuit.
17.	Group Session	2	2		**Lesson 2. Optical sight PGO-7.** 1. Purpose, performance characteristics, completeness. 2. Structure and principle of operation. 3. Optical circuit.
18.	Group	2	2	2	**Lesson 3. Optical sight PAG-17.**

	Session				1. Purpose, performance characteristics, completeness. 2. Structure and principle of operation. 3. Optical circuit. Independent work 1. Work with PSO-1. 2. Work with PGO-7. 3. Work with PAG-17. 4. Preparation for differential testing.
19.	Practical Session	2	2	2	**Lesson 4. Work with optical sights for small arms and grenade launchers.** 1. Work with PSO-1. 2. Work with PGO-7. 3. Work with PAG-17. Independent work 1. Preparation for differential testing.
Control measures		2	2		Differential Test
		32	**24**	**8**	**Topic 5. Sights for artillery guns and mortars.**
20.	Group Session	2	2	2	**Lesson 1. Mechanical sight C71-40.** 1. Purpose, modifications and characteristics of C71-40. 2. Structure and principle of operation. Independent work 1. Checking the sight mount and the correctness of the level adjustment. 2. Determination of the dead stroke of the mechanism of the corners of the city of the target. 3. Determination of the dead stroke of the aiming angle mechanism.
21.	Group Session	2	2	2	**Lesson 2. Gun panorama PG-1M, gun collimator K-1.** 1. Purpose, characteristics, completeness, structure, principle of operation and optical scheme of PG-1M. 2. Purpose, performance characteristics, completeness, structure, principle of operation and optical scheme of K-1. Independent work 1. Alignment of the zero aiming line.

22.	Group Session	2	2		**Lesson 3. OP4M direct aiming optical sight.** 1. Purpose, performance characteristics, completeness. 2. Structure and principle of operation. 3. Optical circuit. Independent work 1. Alignment of the zero aiming line. 2. Full alignment of the gun sighting devices.
23.	Group Session	2	2	2	**Lesson 4. Optical mortar sight MPM-44M.** 1. Purpose, performance characteristics, completeness. 2. Structure and principle of operation. 3. Optical circuit. Independent work 1. Verification of zero installations. 2. Alignment of the zero aiming line.
24.	Group Session	2	2		**Lesson 5. Partial alignment of the gun sighting devices.** 1. Partial alignment of sighting devices 100 mm PTG MT-12. 2. Partial alignment of sighting devices 122 mm G D-30.
25.	Group Session	2	2		**Lesson 6. 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.
26.	Practical Session	6	6		**Lesson 7. Partial alignment of the gun's sighting devices.** 1. Partial alignment of sighting devices 100 mm PTG MT-12. 2. Partial alignment of sighting devices 122 mm G 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 control.
		28	**14**	**14**	**Chapter 3. Structure and operation of electro-optical devices.**
		10	**4**	**6**	**Topic 6. Electro-optical reconnaissance and aiming devices.**
28.	Group Session	2	2	2	**Lesson 1. General information about electro-optical devices.** 1. Classification and purpose of electron-optical devices. 2. The principle of operation and the general structure of electro-optical devices.

					3. Purpose, characteristics, structure and principle of operation of BN-2. Independent work 1. Optical-electronic converters. 2. Optical-electronic spotting scopes. 3. Sources of energy supply for optoelectronic devices.
29.	Group Session	2	2	4	**Lesson 2. Night sights for small arms and cannons.** 1. Purpose, characteristics, completeness, structure and principle of operation of the NSPUM. 2. Purpose, characteristics, completeness, structure and principle of operation of APN-5-40. Independent work 1. Foldable portable launcher 9P135. 2. Missile guidance device 9Sh119M1. 3. Purpose, characteristics, completeness of PNV-57. 4. Purpose, performance characteristics, completeness of TVN-2B.
		12	**6**	**6**	**Topic 7. Quantum rangefinders.**
30.	Group Session	2	2	4	**Lesson 1. General information about quantum rangefinders.** 1. Purpose, classification, principle of operation of a quantum rangefinder. 2. General structural 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. Energy sources of quantum rangefinders. 5. Purpose, characteristics and completeness. 6. Structure and principle of operation. 7. The principle of range measurement.
31.	Group Session	2	2	2	**Lesson 2. Quantum rangefinder LPR-1.** 1. Purpose, characteristics and completeness. 2. Structure and principle of operation. 3. The principle of range measurement. 4. Quantum rangefinder DAK-2M. Independent work 1. Work with DAK-2M.

					2. Work with LPR-1.
32.	Practical Session	2	2		**Lesson 3. Work with quantum rangefinders DAK-2M and LPR-1.** 1. Work with DAK-2M. 2. Work with LPR-1.
		6	**4**	**2**	**Topic 8. Thermal imaging devices.**
33.	Group Session	2	2	2	**Lesson 1. General information about thermal imaging devices.** 1. Physical conditions of operation of a thermal imaging device. 2. Generalized structural diagram of a thermal imaging device and the principle of its operation. Independent work 1. Instrument "Pulsar". 2. Archer sight. 3. Preparation for modular control.
34.	Group Session	2	2		**Lesson 2. Thermal imaging reconnaissance devices and sights.** 1. Reconnaissance device "Pulsar". 2. Archer sight. 3. Modular control.
		30	**22**	**8**	**Chapter 4. Ground navigation equipment (NNA).**
		30	**22**	**8**	**Topic 9. Topographic binders.**
35.	Group Session	2	2	2	**Lesson 1. General information about topographic binders.** 1. Classification and purpose of topographic references. 2. Set and characteristics of topo-binders. 3. Combat control system of the tactical link "Nettle". Independent work 1. The structure of the horizontal correction of the gyrocourse indicator. 2. The structure of azimuthal correction of the gyrocourse indicator. 3. Correction mechanisms of course plotters.
36.	Group Session	2	2		**Occupation 2. Topographic binder 1T120.** 1. Purpose and kit of the 1T120. 2. Purpose, performance characteristics, structure of the gyrocourse indicator 1G13. 3. Purpose and structure of the path sensor. 4. Purpose, performance characteristics, structure of the coordinator and indicator plate.
37.	Group	2	2	2	**Lesson 3. Components 1T120.**

	Session				1. Orientation sight. 2. Purpose, characteristics, structure of KP-4. 3. Artillery gyrocompass 1G17. Independent work 1. Purpose, characteristics, general structure and completeness of the 1G25. 2. Purpose, characteristics, general structure and completeness of the 1G40.
38.	Practical Session	4	4	2	**Lesson 4. Work on the 1T120 machine.** 1. Preparation of the 1T120 for operation. 2. Work on 1T120. Independent work 1. Preparation for field training.
39.	Practical Session	2	2		**Lesson 5. Alignment of sighting devices of guns and mortars in the field.** 1. Alignment of gun sighting devices. 2. Alignment of sighting devices of mortars.
40.	Practical Session	2	2		**Lesson 6. Preparation of artillery devices for work at night.** 1. Work with the NSPU. 2. Working with APN-5-40.
41.	Practical Session	2	2	2	**Lesson 7. Work with artillery devices at night.** 1. Work with BN-2. 2. Work with PAB-2AM. 3. Working with thermal imagers. Independent work Preparation for the exam.
Control measures		6	6		Exam
Total for the discipline		**150**	**100**	**50**	

Organization of military repair of RAA (Rockets and Artillery Armament).

The general goal of the component of the educational programme:
Based on the results of studying the academic discipline, the student of the courses must
know:
the main provisions of the governing documents on the organization of technical monitoring and repair of RAA;
the procedure for keeping records and reporting, write-off of material resources used during the restoration of RAA;
the procedure for the operation, repair and maintenance of RAA;
the procedure for organizing and carrying out maintenance and restoration work of close combat and reconnaissance means;
the procedure for organizing and carrying out maintenance and restoration work of trailed guns, mortars and self-propelled artillery guns.

be able to:
to organize high-quality accounting, storage, issuance and write-off of material assets of the relevant nomenclature;
plan, organize and control the restoration and maintenance of RAA;
organize maintenance and restoration of RAA;
to navigate in modern trends in the development of armaments.

Organizational and methodological guidelines:
The methodology of teaching the discipline is based on the basic principles of didactics (theory of justification and teaching). It provides a scientific and pedagogical characteristic of the forms and methods of teaching, indicates their more expedient combinations to achieve a certain degree of learning, determines the conditions for their most effective use.
To achieve the main goal of training, the programme provides for the following forms of training:
frontal form of learning, when all students under the control of the teacher perform the same task at the same time;
group form of training, when students are combined into groups (departments) depending on the staff structure of the unit, which work in parallel;
an individual form of learning, when students perform tasks sequentially, one after another.
At the same time, depending on the need to achieve levels of knowledge or skill, the teacher should use the following methods:

verbal and visual;

training;

situational-cognitive.

Verbal and visual method, in which the teacher systematically and consistently proves the educational material, showing (demonstrating) the subjects studied in order for students to gain new knowledge and form the appropriate imagination.

The training (reproductive) method is in the performance of complex actions in accordance with the algorithm determined by the head of the lesson (pre-established order) to form the necessary skills and ensure the coherence of military-organizational structures.

Situational and cognitive – in reviewing and discussing real (probable) actions, getting acquainted with the experience of managing troops (forces) in military conflicts and developing skills in information and analytical activities.

The above methods provide students with knowledge, skills, and abilities, but to develop their creative abilities, the leader of the lesson must use the methods of problem-based learning.

Problem-based teaching is when the leader of the lesson puts a problem in front of the students, solves it himself, but at the same time shows the ways to solve it, reveals the course of his thought. The direct result of problem-based teaching should be the student's assimilation of the method and logic of solving a specific problem, but without the ability to apply them independently. This method teaches students how to search for knowledge, with its help they gain creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to independent problem solving by pre-training them to perform individual elements of the solution. It is used during group exercises, when the method of finding the optimal solution is determined by the leader of the lesson, but the student himself finds the solution.

Problem methods provide deep assimilation of knowledge at the level of their creative application, mastering the methods of creative thinking, experience of practical activity.

during lectures:

Lecture is the main type of training sessions designed to assimilate the theoretical material of the topic.

The main purpose of the lecture is to consider the systematized foundations of scientific knowledge and practical experience on the topic, the state and prospects for the development of management science, theory and practice of managerial activity of the military leader, to focus on the most complex and key issues of the educational material. The lecture should be problematic in nature, stimulate active cognitive activity of students, and contribute to the formation of creative thinking in them. To intensify the cognitive activity of military personnel and form their creative thinking during lectures, it is skillful to use

technical means of teaching in combination with active forms and methods of teaching lectures. Classes should be conducted by the method of oral presentation of educational material, individual questions and educational elements should be worked out in the form of a dialogue between the teacher and those who are students, and by posing problematic questions to them.

during group classes:

A group lesson is a type of training session during which the teacher presents new educational material by verbal and visual method, controls the assimilation of this material by students through a survey and contributes to its consolidation.

Group classes are held in order for students to study in detail the issues and problems discussed at the lectures, and to consider in detail topical issues of the educational material. The main teaching methods in this case are explanations with demonstration and conversation in the form of a discussion. To ensure clarity during classes, it is necessary to use technical means of transmitting information, tables, diagrams, slides, filmstrips and posters.

during practical classes:

A practical lesson is a type of training session during which the teacher organizes the assimilation of the theoretical provisions of the topic through individual performance of specially designed tasks and contributes to the formation of skills and abilities in them for the practical application of these theoretical provisions.

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

during the organization of independent work:

To carry out independent work in order to work out and assimilate the educational material; consolidation and deepening of knowledge, skills and abilities; preparation for subsequent classes and control activities; formation of a culture of mental work, independence and initiative in the search, acquisition and enrichment of knowledge in students.

To provide independent work with educational literature, teaching aids, tasks and methodological recommendations. All educational and methodological materials of classes must have electronic versions. Methodological materials for independent work should provide for the possibility of self-control.

Logistics:

Classes should be held in specialized classrooms, which should be equipped with personal electronic computing equipment. Be sure to use technical means of teaching during training sessions.

Information and methodological support:

1. Law of Ukraine "On Defence of Ukraine".
2. Strategy of National Security of Ukraine: appr. Decree of the President of Ukraine of 26.05.2015, No 287/2015.
3. Military doctrine of Ukraine. By the Decree of the President of Ukraine of 24.09.2015, No 555/2015.
4. Strategic Defence Bulletin of Ukraine: enacted by the Decree of the President of Ukraine of 06.06.2016, No 240/2016.
5. Repair and locksmith artillery workshop MRS-AR. Technical description and operating instructions. 49122-0000000 TO.
6. MRM-M1 repair and mechanical workshop. Instruction manual. 4920-0000000 RE.
7. TA-6 transport vehicle for transporting equipment. Passport. 12U1.258-0000000 PS.
8. Workshop for the repair of radio engineering stations. Technical description and operating instructions. AE2.009.054 TO.
9. Maintenance workshop MTO-V. Technical description and operating instructions. 49101-0000000 TO.
10. Minasov V.S., Rudyi O.Y. Application of military repair bodies in combat conditions. Manual. Odesa: 2001. 144 p. (in Russian).
11. The use of units and military units of technical support. Part I: Units of Technical Support. Manual. / Ovcharenko I.V. et al. ; per row. Kopashinsky S.A. Kyiv: NUOU. Ivan Chernyakhovsky, 2017. 136 p. (in Russian).
12. The use of units and military units of technical support. Part II: Repair and Restoration of the Military Unit: Manual. Manual. / Ovcharenko I.V. et al. ; per row. Kopashinsky S.A. Kyiv: NUOU. Ivan Chernyakhovsky, 2018. 80 p. (in Russian).
13. Balashkin A.V. Production and repair of rocket and artillery weapons. Part 1.
14. Balashkin A.V. Production and repair of rocket and artillery systems. Part 1.
15. GOST 2. 601-68. GOST 2. 6065-68. Unified system of design documentation. Operational and repair documentation.
16. Product 6G7. Guide to medium repairs.
17. Product 2A29. Guide to average repair 2A29 RS.
18. Виріб 2А42. Пам’ятка 2А42.00.000 ДЭП.
19. Product 2A42. Recovery instructions.
20. Product 2A42. Instruction manual.
21. Kasyn M.E. Directory of the specialist of the production unit for the repair of weapons.
22. Kutsopalo V.S. Fundamentals of General Technology of Armament Repair.
23. Kutsopalo V.S. Fundamentals of Organization of Production at Enterprises for Armament Repair.

24. Kutsopalo V.S. Handbook on armament repair.
25. Nazaretov G.B. Fundamentals of organization and general technology of repair of artillery weapons.
26. Instructions on shooting. 7.62 mm Kalashnikov machine gun (PK, PKS, PKB, PKT).
27. Instructions on shooting. Hand-held anti-tank grenade launcher (RPG-7 и RPG-7D).
28. Fundamentals of technology for repairing parts of artillery weapons / A.B. Balashkin, A.D. Bespahotny, V.D. Sviridov, N.P. Fadeev, A.L. Shekhobalov.
29. General Guidelines for the Repair of Rocket and Artillery Weapons. Part 3. Repair of artillery guns, small arms and close combat equipment.
30. Fundamentals of the structure and operation of small arms and grenade launchers / Methodical manual.
31. Technical maintenance and repair of artillery weapons / A.S. Abdulin, K.V. Salukvadze, B.M. Shakhmametyev / Ed. K.V. Salukvadze.
32. 9 mm Makarov pistol (PM). Guide to average repairs
33. 122-mm howitzer 2A31. Technical description and operating instructions2A31 T.O.
34. 5.45-mm Kalashnikov assault rifles AK-74, AKS-74 and AKS-74U and 5.45-mm Kalashnikov light machine guns RPK-74 and RPKS-74. Guide to medium repairs. Norms for the use of spare parts and materials.
35. 7.62-mm Kalashnikov machine guns PK, PKS, PKT, PBK. Medium repair.
36. 7.62 mm modernized Kalashnikov machine guns PKM, PKMS, PKMN and PKMSN. Guide to medium repairs.
37. 12.7 mm machine gun "Utes" on the 6T7 infantry machine gun (NSVS-12.7). Technical description and operating instructions.
38. 7.62 mm Dragunov SVD sniper rifle. Guide to medium repairs.
39. Hand-held anti-tank grenade launchers RPG-7, RPG-7V and RPG-7D. Guide to medium repairs.
40. Manual for the operation of military calibres and devices.
41. Repair manual for 14.5-mm Vladimirov KPV heavy machine guns and KPVT tank machine gun.
42. Radioactive waste operation manual. Part 1.
43. Guidelines for organizing the work of repair bodies of units and connections.
44. Instruction on the operational work of the headquarters, part II (military unit) of the NOR-2016, Order of the Chief of General Staff of Ukraine dated 29.06.2016.
45. Regulations on the military (ship) economy of the Armed Forces of Ukraine. the Order of the Ministry of Defence of Ukraine of 16.07.97, No 300 was put into effect.

46. The use of military repair units in combat conditions. Tutorial. V.S. Minasov, O.Y. Rudy. Odesa – 2001. 144 p. (in Russian).
47. Specifics of the theory of reliability and operation of MAA. Tutorial. OOLISV. – 2018. 272 p.
48. Temporary Instruction on Logistics of the Armed Forces of Ukraine. Part 1. Material and technical support for the preparation and conduct of operations of the Armed Forces of Ukraine.
49. Order of the Ministry of Defence of Ukraine dated 04.01.2019 No. 4 "On Approval of the Instruction on the Procedure for Categorization of RAA."
50. Order of the Ministry of Defence of Ukraine No. 545 of 16.08.2012 "On Approval of the Instruction on the Organization of Repair of RAA in Peacetime".
51. Order of the Ministry of Defence of Ukraine of 17.08.17, No 440 "On Approval of the Instruction on Accounting of Military Property in the Armed Forces of Ukraine"
52. Order of the Ministry of Defence of Ukraine No. 17 of 12.01.2015 "The procedure for writing off military property in the Armed Forces of Ukraine.
53. Guidelines for the organization of operation and storage of alkaline batteries used in RAA samples part 1. View. 1990. Approved by the deputy commander of the military unit 64179 on 26.03.86.
54. Resolution of the Cabinet of Ministers of Ukraine dated 27.08.2003. No. 1359 "On Amendments to the Methodology for Determining the Net Book Value of the Property of the Armed Forces of Ukraine and Other Military Formations."
55. Manual for 7,62-mm Kalashnikov machine guns PK, PKM, PKMS, PKB, PKM, PKT. - Kyiv: Varta, 2003.
56. Manual for the 40-mm underbarrel grenade launcher GP-25-K.: Varta, 2007.
57. Instruction manual for the 40-mm round "Nail". - Kyiv: Varta, 2009.
58. Manual for a 30-mm automatic grenade launcher on a machine (AGS-17). - Kyiv: Varta, 2004.
59. 30 mm automatic rifle. Technical description. 2A42. TO. - Kyiv: Varta, 2004.
60. 73-mm gun 2A28 "Thunder". Technical description. - Kyiv: Varta, 2001.
61. Small arms. Tutorial. - Odesa: Military Academy, 2013.
62. Maintenance of small arms. Educational and methodological manual. - Odesa: Military Academy, 2018.

Information resources

1. Website of the Military Academy (Odesa). www.vaodesa.org.ua.
2. Electronic Library of the Military Academy (Odesa) (internal network). http://192.168.1.254/.

3. Electronic Library of the Department of Missiles 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/.

Types, topics of training sessions and training questions.

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Educational Classes	Independent work	
1	*2*	*3*	*4*	*5*	*6*
		60	**40**	**20**	**Chapter 1. Organization of the work of repair units and formations.**
		22	**14**	**8**	**Topic 1. Structure of repair units and organization of repairs.**
1.	Lecture	2	2		**Lesson 1.** Introduction. 1. Purpose, tasks, main content and subject of study of the discipline. Its role and place in the training of a specialist in the missile and artillery armament service. 2. Incoming control. 3. Basic provisions for the organization of repair units and formations. Guiding documents.
2.	Group session	2	2		**Lesson 2. Repair units of the Ground Forces.** 1. Structure of repair units. 2. Repair units and formations.
3.	Group session	2	2	2	**Lesson 3. Duties of officials for the organization of repairs.** 1. Duties of officials of military repair units. 2. Siting and equipment of repair and maintenance areas. Independent work 1. Duties of officials of the armament repair platoon. 2. Duties of officials of the armament repair company.
4.	Group session	2	2		**Lesson 4. Planning the repair of weapons in the troops.** 1. General provisions on the organization of weapons repair in the troops. 2. Planning of work in military repair bodies.
5.	Group session	2	2	2	**Lesson 5. Organization of weapons repair in the troops.** 1. Organization of weapons repair in the troops. 2. The procedure for receiving and issuing repaired weapons. Independent work

					1. Measures for the organization of the production process at the repair enterprise. 2. Technological process of weapons repair.
6.	Group session	2	2		**Lesson 6. Organization of labor in repair units.** 1. Organization of labor in military repair units. 2. Fire safety measures in repair units.
7.	Group session	2	2	4	**Lesson 7. Features of the organization of repairs during hostilities.** 1. Organization of weapons repair during the offensive. 2. Organization of weapons repair during defence. Independent work 1. Organization of weapons repair in different climatic conditions and at night. 2. Organization of repair of weapons during the action of means of mass destruction.
		14	**8**	**6**	**Topic 2. Instructions on safety measures when repairing weapons.**
8.	Lecture	2	2		**Lesson 1. General instructions for repairs and safety measures.** 1. General repair instructions. 2. General provision on safety measures during repairs.
9.	Group session	2	2	2	**Lesson 2. Safety measures during repair work.** 1. Safety measures when working with electrical and radio equipment, power plants and power units. 2. Safety measures when working with ultra-high frequency sources and X-ray radiation sources. Independent work 1. Safety measures when performing welding works. 2. Safety measures when working with reservoirs that are under pressure.
10.	Group session	2	2	4	**Lesson 3. Safety measures when working with toxic substances.** 1. Safety measures when working with inhibited paper. 2. Safety measures when working with poisoned and aggressive liquids. 3. Safety measures when working with epoxy resins and paints and varnishes. Independent work 1. Safety measures when working with lifting mechanisms. 2. Safety measures for machining and locksmith work. 3. Safety measures when working with hand tools.
11.	Practical session	2	2		**Lesson 4. Equipment in repair bodies of parts.** 1. Equipment of maintenance and repair points. 2. Equipment for the place of work with batteries.

		22	**16**	**6**	**Topic 5. General provisions for defect detection of weapons**
12.	Group session	4	4		**Lesson 1. Types of defects in parts and prefabricated units.** 1. Types of defects in parts and their connections. 2. Malfunctions of components and mechanisms.
13.	Group session	2	2		**Lesson 2. Weapon defect detection technology.** 1. Purpose and types of defect detection. 2. Defect detection of weapons in assembled form. 3. Defect detection of the components of the product**.**
14.	Group session	2	2	3	**Lesson 3. Assembled defects.** 1. The procedure for preparing a sample of weapons for defect detection. 2. External inspection and verification of functioning without turning on the voltage. 3. Checking the insulation resistance of electrical circuits. 4. The procedure for checking the functioning with the voltage on. Independent work 1. Technical inspection, measurement of geometric dimensions. 2. Physical methods of defect detection.
15.	Group session	2	2	3	**Lesson 4. Disassembly and assembly of components and mechanisms.** 1. Disassembly of typical connections and assemblies. 2. Assembling typical connections and assemblies. Independent work 1. Assembly of typical components and mechanisms, general requirements. 2. Assembling threaded and keyway connections. 3. Assembly of gears and bearings.
16.	Group session	2	2		**Lesson 5. Pinning parts during assembly work.** 1. Drilling and reaming holes for pins. 2. Pin with special pins.
17.	Group session	2	2		**Lesson 6. Troubleshooting of components removed from the weapon sample.** 1. Troubleshooting of components in assembled form. 2. Defect detection of components in disassembled form**.**
18.	Group session	2	2		**Lesson 7. Instructions for disassembling and inspecting artillery devices.** 1. Disassembling the device into its component parts and inspecting the parts. 2. Inspection methods and types of contamination of optical parts.
Control measures		2	2		Differential Test
		120	**80**	**40**	**Chapter 2. Weapons repair technology.**

		38	**28**	**10**	**Topic 4. General provisions for the repair of parts and joints.**
19.	Group session	2	2		**Lesson 1. Preparation of parts for repair.** 1. Technology of depreservation and washing. 2. Cleaning parts from corrosion.
20.	Group session	2	2	4	**Lesson 2. Repair of threaded and splined connections.** 1. Repair of threaded connections. 2. Repair of keyway and spline connections. Independent work 1. Types of defects. 2. Malfunctions of components and mechanisms.
21.	Group session	2	2		**Lesson 3. Repair of standard parts and connections.** 1. Troubleshooting and repair of springs. 2. Troubleshooting and repair of bearings and gears. 3. Repair of pipelines, hoses (hoses).
22.	Group session	2	2		**Lesson 4. Methods for restoring and strengthening parts.** 1. Purpose and classification of the main methods of repairing parts. 2. Restoration of the fit on the mating parts. 3. Restoration of plantings by the method of auxiliary parts.
23.	Group session	2	2		**Lesson 5. The procedure for repairing metal parts.** 1. The procedure for eliminating bruises, scuffs, dents, bends, fractures. 2. The procedure for eliminating holes and cracks.
24.	Practical session	4	4	2	**Lesson 6. Repair of metal parts.** 1. Elimination of bruises, scuffs, dents, bends, fractures. 2. Elimination of holes and cracks. Independent work 1. Removal of corrosion from the surfaces of the part. 2. Restoration of inscriptions on parts.
25.	Group session	2	2	2	**Lesson 7. Repair of plastic parts.** 1. General requirements and characteristics of plastics. 2. Riveting and threaded connections of plastic parts. 3. Connecting plastic parts by soldering. Independent work 1. Gluing plastic, porcelain and other parts. 2. Restoration of parts using self-guided plastics.

26.	Group session	2	2		**Occupation 8. Repair of wooden parts.** 1. Restoration of wooden handles. 2. Elimination of shakiness of metal reinforcement on wooden parts. 3. Restoration of wooden reinforcement in packaging boxes. 4. Elimination of cracks and cracks in a special closure.
27.	Group session	2	2		**Lesson 9. Repair of seals and leather and fabric products.** 1. Repair of general-purpose seals. 2. Repair of leather and fabric products.
28.	Group session	2	2	2	**Lesson 10**. **Renewal of parts by welding and surfacing.** 1. General information. 2. Repair of parts by welding. Independent work 1. Method of steeling parts. 2. Technological process of metallization.
29.	Group session	2	2		**Lesson 11. Electroplating and chemical refurbishment of parts.** 1. Renewal of electroplating and chemical coating. 2. Chrome plating and nickel plating. 3. Tinning and coppering.
30.	Group session	4	4		**Lesson 12. Repair of optical parts and painting weapons.** 1. Restoration of optical details. 2. Paints and varnishes, use in the repair of artillery weapons. 3. Painting technology and quality control of the paintwork of artillery guns.
		22	**14**	**8**	**Topic 5. Repair of small arms and close combat equipment.**
31.	Group session	2	2		**Lesson 1. Current repair of small arms and close combat equipment.** 1. General provisions. 2. The procedure for eliminating general malfunctions of the components of CO and reinforced concrete components. 3. Documenting the results of defecation and repair.
32.	Group session	2	2		**Lesson 2. Features of repair of CO and reinforced concrete products.** 1. Basic safety measures during the repair of CO and reinforced concrete products. 2. The procedure for restoring the protective coating on metal parts. 3. Procedure for repairing wooden parts.
33.	Group	2	2	2	**Lesson 3. Inspection checklist of the PM pistol, AK-74 assault rifle, PKM, PKT, NSVT and**

	session				**KPVT machine guns.** 1. Troubleshooting of the weapon in assembled form. 2. Troubleshooting checklist of the weapon in disassembled form. Independent work 1. General instructions. 2. Troubleshooting of common faults. 3. Repair of components and mechanisms.
34.	Practical session	2	2		**Lesson 4. Troubleshooting and repair of the PM pistol, AK-74 assault rifle, PKM, PKT, NSVT and KPVT machine guns.** 1. Troubleshooting of rifle in assembled form. 2. Troubleshooting checklist of the rifle in disassembled form. 3. Repair of components and mechanisms.
35.	Group session	2	2	2	**Lesson 5. Defect detection of grenade launchers.** 1. Defect detection of grenade launchers in assembled form. 2. Disassembled defect detection of grenade launchers. Independent work 1. Troubleshooting of grenade launchers in assembled form. 2. Troubleshooting checklist of the grenade launchers in disassembled form. 3. Repair of components and mechanisms.
36.	Self Work	2		2	**Lesson 6. Typical malfunctions of the 2A28 gun**.
37.	Self Work	2		2	**Lesson 7. Typical malfunctions of the 2A42 automatic gun.**
38.	Practical session	4	4	4	**Lesson 8. Troubleshooting and repair of grenade launchers and automatic guns.** 1. Defect detection of grenade launchers. 2. Malfunctions and repair of grenade launchers. Independent work 1. Malfunctions and repair of the barrel with breech. 2. Malfunctions and repair of the lock. 3. Malfunctions and repair of the barrel and receiver unit. 4. Malfunctions and repairs of the lock frame and lock.
		60	**40**	**20**	**Topic 6. Current repair of the operation part of the artillery.**
39.	Group session	2	2		**Lesson 1. List of mandatory inspections and repair of the barrel.** 1. Preparation of inspection means for use.

					2. List of the mandatory barrel inspections.
40.	Group session	2	2	2	**Lesson 2. List of the mandatory checks and repair of locks.** 1. Typical malfunctions of sliding wedge breech and methods of elimination. 2. Characteristic malfunctions of breech plug and methods of elimination. Independent work 1. Methods for checking barrels and the procedure for eliminating defects. 2. Methods for checking bars.
41.	Practical session	6	6		**Lesson 3. Troubleshooting and repair of the barrel and bolt.** 1. Troubleshooting of the barrel and wedge bolt in assembled form. 2. Disassembly and troubleshooting by parts. 3. Repair of parts, assembly and adjustment.
42.	Group session	2	2	4	**Lesson 4. Troubleshooting of recoil devices.** 1. Troubleshooting of recoil on the gun. 2. The procedure for repairing recoil devices. Independent work 1. Troubleshooting of wheel anti-recoil devices assembled. 2. Repair of recoil devices.
43.	Practical session	6	6		**Lesson 5. Troubleshooting and repair of anti-recoil devices.** 1. Recoil and roll brake troubleshooting when assembled. 2. Disassembly and troubleshooting by parts. 3. Repair of parts, replacement of sealing agents, assembly and adjustment.
44.	Group session	2	2	4	**Lesson 6. Fault detection of guidance mechanisms.** 1. Troubleshooting of guidance mechanisms on the gun. 2. The procedure for repairing guidance mechanisms. Independent work 1. Repair of the lifting mechanism. 2. Repair of the swivel mechanism. 3. Repair of the lower machine. 4. Repair of the combat course and suspension.
45.	Practical session	4	4		**Lesson 7. Troubleshooting and repair of guidance mechanisms, lower machine, combat course and suspension.** 1. Defect detection of mechanisms assembled and disassembled. 2. Repair of parts, assembly, adjustment of mechanisms. 3. Troubleshooting of the lower machine in assembled form.

					4. Repair and adjustment of the combat course, suspension.
46.	Group session	2	2	2	**Lesson 8. Defect detection of sighting devices.** 1. Defect detection of sighting devices on the gun. 2. The procedure for repairing sighting devices. Independent work 1. Partial sight check. 2. Full sight check.
47.	Practical session	6	6		**Lesson 9. Troubleshooting and repair of the sight.** 1. Troubleshooting of the sight in assembled form. 2. Disassembly of the sight and troubleshooting by parts. 3. Repair of parts, assembly, inspection of mechanisms.
48.	Group session	2	2	8	**Lesson 10. Organization and methods of current repair of various types of artillery weapons.** 1. Repair of trailed guns and mortars. 2. Repair of self-propelled guns. Independent work 1. The procedure for troubleshooting mortars. 2. Features of mortar repair. 3. The procedure for defect detection of SAG. 4. Features of SAG repair. **5.** Exam preparation
Control measures		6	6		Exam
Total for discipline		**180**	**120**	**60**	

Organization of the use of special software based on SAP S/4HANA "LIS 1.0". information and communication system for managing logistics support.

General goal of the discipline (subject of study).

Based on the results of studying the academic discipline, the student of the courses must

Know

the main provisions of the governing documents on accounting, write-off, categorization and storage of RAA during combat activities.

the procedure for keeping records and reporting, writing off material assets of the relevant RAA nomenclature during combat activities.

the procedure for organizing UAV accounting in the logistics information system (LIS) based on the Defence Resources Management System (SAP).

Be able to

organize high-quality accounting and reporting of material assets of the relevant RAA nomenclature during hostilities.

to organize high-quality storage and issuance of materiel of the relevant nomenclature of RAA during hostilities.

organize high-quality categorization and write-off of material assets of the relevant RAA nomenclature during hostilities.

organize and methodically correctly record UAVs in the logistics information system (LIS) based on the Defence Resources Management System (SAP).

Organizational and methodological guidelines:

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

To achieve the main goal of training, the programme provides for the following forms of training:

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

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

an individual form of learning, when students perform tasks sequentially, one after another.

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

verbal and visual;

Training;

situational-cognitive.

Verbal and visual method, in which the teacher systematically and consistently proves the educational material, showing (demonstrating) the subjects studied in order for students to gain new knowledge and form the appropriate imagination.

The training (reproductive) method is in the performance of complex actions in accordance with the algorithm determined by the head of the lesson (pre-established order) to form the necessary skills and ensure the coherence of military-organizational structures.

Situational and cognitive – in reviewing and discussing real (probable) actions, getting acquainted with the experience of managing troops (forces) in military conflicts and developing skills in information and analytical activities.

The above methods provide students with knowledge, skills, and abilities, but to develop their creative abilities, the leader of the lesson must use the methods of problem-based learning.

Problem-based teaching is when the leader of the lesson puts a problem in front of the students, solves it himself, but at the same time shows the ways to solve it, reveals the course of his thought. The direct result of problem-based teaching should be the student's assimilation of the method and logic of solving a specific problem, but without the ability to apply them independently. This method teaches students how to search for knowledge, with its help they gain creative thinking skills.

The search (heuristic) method serves the purpose of gradually bringing students closer to independent problem solving by pre-training them to perform individual elements of the solution. It is used during group exercises, when the method of finding the optimal solution is determined by the leader of the lesson, but the student himself finds the solution.

Problem methods provide deep assimilation of knowledge at the level of their creative application, mastering the methods of creative thinking, experience of practical activity.

When conducting group classes:

A group lesson is a type of training session during which the teacher presents new educational material by verbal and visual method, controls the assimilation of this material by students through a survey and contributes to its consolidation.

Group classes are held in order for students to study in detail the issues and problems discussed at the lectures, and to consider in detail topical issues of the educational material. The main teaching methods in this case are explanations with demonstration and conversation in the form of a discussion. To ensure clarity during classes, it is necessary to use technical means of transmitting information, tables, diagrams, slides, filmstrips and posters.

During practical classes:

A practical lesson is a type of training session during which the teacher organizes the assimilation of the theoretical provisions of the topic through individual performance of specially designed tasks and contributes to the formation of skills and abilities in them for the practical application of these theoretical provisions.

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

Logistics:

Classes should be held in specialized classrooms, which should be equipped with personal electronic and computer equipment and a training ground of the centre for supporting the educational process. Be sure to use technical means of teaching during 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 for categorization of missile and artillery weapons" approved by the Order of the Minister of Defence of Ukraine dated 04.01.2019 No. 4.
3. "Instructions for the organization of repair of rocket and artillery weapons in peacetime" approved by the Order of the Ministry of Defence of Ukraine dated 16.08.2012 No. 545.

4. "Instructions for accounting of military property in the Armed Forces of Ukraine" was introduced by the Order of the Minister of Defence of Ukraine of 17.08.17, No 440, as amended on January 11, 2024 No. 21.

5. "Instruction on the organization 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 dated 29.06.2005, No. 359, as amended on December 30, 2021, No. 404.

6. "Instructions on the Specifics of Conducting an Inventory of Small Arms, Missiles and Ammunition in the Armed Forces of Ukraine" was enacted by the Order of the Minister of Defence of Ukraine dated 10.01.2017, No. 16.

7. "Methodology for determining the residual value of the 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 Writing Off 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 dated 29.03.2021, No. 81.

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

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

11. Logistics Information System (LIS) Training Portal tutor.mil.ua

Names of topics and distribution of study time by types of educational classes

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
		60	**52**	**8**	**Topic 1. Keeping records of UAVs in the logistics information system (LIS) based on the Defence Resources Management System (SAP).**
1.	Group session	4	4		**Lesson 1. Organization and types of property receipt in a military unit.** 1. UAV accounting system based on SAP 2. Navigation in the system, the concept of cockpits and transactions. 3. Distance learning portal 4. Reference of materials in the system 5. Receipt of property by order 6. Printed form "Invoice for the movement of military property between military units"
2.	Practical session	2	2	1	**Lesson 2. Working out the movement of property between military units.** 1. Receipt of property by orders 2. Material Document List Report (mb51 transaction) 3. Printed form "Invoice for the movement of military property between military units" Independent work 1. Setting up selection criteria 2. Create and save formats
3.	Group session	2	2		**Lesson 3. Primary reporting in the system. Receipt of property without an order.** 1. Types of movements in the system 2. Report list of documents materials 3. Report warehouse stocks of materials 4. Receipt of property without order. Types of receipts without an order
4.	Practical session	2	2	1	**Lesson 4. Receipt of property in the system.**

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
					1. Receipt of property without an order 2. Analysis of receipts in the report List of documents materials Independent work 1. Creation of a report on the receipt of property for the period
5.	Group session	4	4		**Lesson 5. Basics of moving property in the system.** 1. Issue note and order. Creating an issue note in the system 2. Approval of the order 3. Formation of delivery and release of property 4. Work Order Processing Control Report (Transaction ymm_tf) 5. Electronic issue note
6.	Practical session	4	4	1	**Lesson 6. Practicing the movement of property in the system between military units.** 1. Creating and approving an order 2. Formation and release of property 3. Receipt of property by order 4. Control of the execution of work orders in a transaction YMM_TF Independent work 1. Formation of a printed form of an electronic work order through a report YMM_TF 2. Formation of the printed plate through the cockpit.
7.	Group session	4	4	1	**Lesson 7. Moving property in a system within a single plant.** 1. The concept of reservation, stages of reservation 2. Moving Property Between Warehouses (Movement Type 311) 3. Changing the category (movement type yc1)

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
					4. Report list of documents materials 5. Report warehouse stocks of materials. Independent work 1. Printed form of the Act of Acceptance and Transfer Printed form of the Invoice for movement between warehouses (act of internal transfer)
8.	Practical session	4	4		**Lesson 8. Work with property within one plant (part).** 1. Receipt of property on a work order / without an order 2. Issuance of property to subdivisions 3. Change of category 4. Printed forms of the invoice for the issuance of property to the unit.
9.	Group session	4	4		**Lesson 9. Operation of equipment.** 1. Report Display Equipment IH08 2. Report Settings 3. Changing the manufacturer's serial number 4. Change in the operational status of property 5. Massive change in property status 6. Form 6.11 as part of the IH08 report.
10.	Practical session	4	4	1	**Lesson 10. Keeping high-quality records of property statuses.** 1. Changing the statuses of the user's property 2. Work with property features 3. Building reports within transaction IH08. Independent work

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
					1. Using SAP internal mail. 2. Sending/receiving reports via SAP internal mail.
11.	Group session	2	2		**Lesson 11. In-depth reporting in the system.** 1. Inventory report on the posting date 2. Serial Number Movement
12.	Practical session	4	4		**Lesson 12. Analysis of actions in the system based on reports.** 1. Receipt of property by order 2. Receipt of property without an order 3. Stock on posting date 4. Serial Number Movement Independent work 1. Tracking the life cycle of property in the system
13.	Group session 1/19	2	2		**Lesson 13. Cancelling actions in the system.** 1. Reversal (migo) 2. Cancel a release using transaction vl09 3. Cancellation of delivery formation vl02n
14.	Practical session 1/20	6	6		**Lesson 14. Practical exercises for correcting actions. Entering leftovers into the system.** 1. Creating and approving an order 2. Formation and release of property 3. Cancellation of delivery and cancellation of supply through vl02 and vl09 4. Receipt of property 5. Reversal of receipt

No	Types of training sessions, control measures	Total hours	Of these:		Topic title and training questions
			Classroom hours	Independent work	
1	*2*	*3*	*4*	*5*	*6*
					6. Entering the balances of receipts without orders 7. Checking the availability of orders for receiving property. Independent work Repetition of the material covered. Exam preparation
Control measures		4	4		Differential Credit
Total for the discipline		**60**	**52**	**8**	