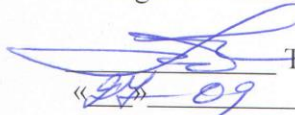


**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**  
**NATIONAL AVIATION UNIVERSITY**  
 Faculty of Transport, Management and Logistics  
 Air Transportation Management Department

AGREED

Dean of the Faculty of the Transport,  
 Management and Logistics

 Tetiana MOSTENSKA  
 «09» 09 2021

APPROVED

Vice-Rector for Academic

 Anatoli POLUKHIN  
 «07» 10 2021



Quality Management System  
**COURSE TRAINING PROGRAM**  
 on

**«Supply Chains and Logistics Centers Management»**

Educational and Professional Program: «Air Transportation Management»

Field of study: 27 «Transport»

Speciality: 275 «Air Transport Technologies»

Specialization: 275.04 «Air Transport Technologies»

Training Form	Semester	Total (hours/credits ECTS)	Lectures	Practicals	Lab. classes	Self-Study	HW/CGP	TP/CP	Semester Grade
Full-time:	1	105/3,5	17	-	17	71	CGP-1	-	Graded tests

Index CM-7-275/21-2.1.4

QMS NAU CTP 19.01-01-2021



Course Training Program on «Supply Chains and Logistics Centers Management» is developed on the basis of the Educational and Professional Program «Air Transportation Management», Master Curriculum and Extended Master Curriculum №CM-7-275-1/21, №ECM-7-275-1/21 for Speciality 275 «Air Transport Technologies», Specialization 275.04 «Air Transport Technologies» and corresponding normative documents.

Developed by:

Associate Professor of the  
Air Transportation Management Department *O. Katerna* Olga KATERNA


Head of the  
Air Transportation Management Department *Dmytro Shevchuk* Dmytro SHEVCHUK

Discussed and approved by the Graduate Department for Specialty 275 «Air Transport Technologies», Specialization 275.04 «Air Transport Technologies» and Educational and Professional Program «Air Transportation Management» - Air Transportation Management Department, Minutes № 15 of 31.09.2021.

Guarantor of Educational and  
Professional Program *Iryna Vysotska* Iryna VYSOTSKA


Head of the Department *Dmytro Shevchuk* Dmytro SHEVCHUK

Vice-Rector on International  
Collaboration and Education  
*Iryna Zarubinska* Iryna ZARUBINSKA  
«7» 10 2021

	<p>Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»</p>	<p>Document Code</p>	<p>QMS NAU CTP 19.01-01-2020</p>
		page 3 of 11	

## CONTENTS

<b>Introduction .....</b>	<b>4</b>
<b>1. Explanatory notes .....</b>	<b>4</b>
1.1. Place, aim, objectives of the subject .....	4
1.2. Results of mastering the training course .....	4
1.3. Competencies of mastering the training course .....	4
1.4. Interdisciplinary connections .....	4
<b>2. Academic curriculum of the subject.....</b>	<b>5</b>
2.1. The subject content.....	5
2.2. Modular structuring and integrated requirements for each module.....	5
2.3. Subject structure.....	7
2.4. Calculated and graphic paper.....	7
<b>3. Basic concepts of guidance on the subject .....</b>	<b>8</b>
3.1. Teaching methods.....	8
3.2. List of references (basic and additional) .....	8
3.3. Internet resources .....	9
<b>4. Rating system of knowledge and skills assessment .....</b>	<b>9</b>

	Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»	Document Code	QMS NAU CTP 19.01-01-2020  page 4 of 11
--	---	------------------	--

## INTRODUCTION

Course Training Program on «Supply chain management and logistics centers» is developed based on the "Methodical guidance for the subject course training program", approved by the order № 249/ОД, of 29.04.2021 and corresponding normative documents.

### 1. EXPLANATORY NOTES

#### 1. Place, objectives, tasks of the subject.

The subject is an integral part of the theoretical basis of knowledge and skills in training specialists in the field of transportation organization and management of transport (air).

**The objective** of the subject is to ensure a sufficient level of competence of transport industry specialists in management issues, understanding the conceptual foundations of systemic management of enterprises in the aviation and tourism industries, acquiring the skills of analyzing the internal and external environment, making adequate, economically sound management decisions, and forming modern management thinking.

The **tasks** of the subject are:

- familiarizing students with the basic concepts and definitions of the subject of the supply chain;
- study of the methodology for optimizing the logistics costs of supply chains;
- study of the features of strategic, tactical and operational planning of flows in supply chains;
- study the indicators that affect the efficiency of supply chains.

#### – 1.2. Learning outcomes the subject makes it possible to achieve.


- ensure the safety of people and the environment during professional activities and implementation of projects in the field of transport systems and technologies;
- investigate the impact of customs procedures on the efficiency of transport technologies;
- develop and apply modern technologies of transport and forwarding services;
- organize work, to ensure his professional development and objective assessment.

#### – 1.3. Competences the subject makes it possible to acquire.

- ability to motivate people and move towards a common goal;
- ability to assess and ensure the quality of work performed;
- ability to generate new ideas (creativity)
- ability to manage supply chains and logistics centers;
- ability to manage freight traffic by mode of transport;
- ability to manage passenger traffic by mode of transport;
- ability to manage the reliability and efficiency of transport systems and technologies;
- the ability to carry out an examination of transport accidents by type of transport.

#### 1.4. Interdisciplinary connections.

This subject is the basis for studying such subjects, as: «Management in integrated transport systems» and is basic for studying subjects, as: «Mathematical methods of modeling and optimization of transport systems and processes», «Term paper «Mathematical methods of modeling and optimization of transport systems and processes», «Term project «Project Management in the transport industry».

	Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»	Document Code	QMS NAU CTP 19.01-01-2020
		page 5 of 11	

## 2. ACADEMIC CURRICULUM OF THE SUBJECT

### 2.1. The subject content.

Training material is structured according to module principle and consists of **one educational module, Module № 1 «Supply chain as a logistic form of organization of the management process»**, that is logically complete, relatively independent, holistic part of the subject, learning of which provides module test and analysis of its performance.

### 2.2. Modular structuring and integrated requirements for each module.

**Module №1 «Supply chain as a logistic form of organization of the management process»**

#### **Integrated requirements to module №1:**

**Know** the basic concepts and definitions of the subject about supply chains; methodology for optimizing the logistics costs of supply chains;

**Be able** to determine the features of strategic, tactical and operational planning of flows in supply chains; indicators that affect the efficiency of supply chains.

#### **Topic 1. Theoretical foundations of supply chain management.**

Preconditions for the development of integrated management in the organization of logistics activities. Paradigms of logistics and supply chain management: functional, resource, innovative. Complications of market relations in the supply chain from the perspective of taking into account the factor of time and customer-oriented business. The concept of the supply chain and the need to manage it. The importance of introducing the concept of supply chain management in the practice of enterprises. The role and place of Ukrainian enterprises in global supply chains. State, factors and trends in the development of supply chain management in Ukraine. The evolution of the concept of supply chain management.

#### **Topic 2. Design of supply chains.**

An analog model of the supply chain. The structure of the supply chain logistics. Basic supply chain model. Characteristics of the structural elements of the supply chain. Factors influencing the structure of the supply chain. Main characteristics of the supply chain. Supply chain classification. Main activities in the supply chain. The main stages of supply chain design. Choosing an alternative option for improving processes in the supply chain. Improvement and redesign of supply chains. Reengineering of the supply chain as a way to improve and redesign it. Development of a multidimensional dynamic model of supply chain management.


#### **Topic 3. Management decisions in supply chains.**

The essence and objectives of supply chain management (SCM - Supply Chain Management). The main provisions of the concept of supply chain management. Strategic supply chain controls. Scientific base of supply chain management. General supply chain management algorithm. Basic levels of decision making in supply chain management, their classification and relationship. Decision making models in supply chain management. Tools for solving supply management problems: optimization methods, statistical methods, simulation. Solution optimization tools in supply chain management.

#### **Topic 4. Decision making in supply chain management in conditions of uncertainty.**

Causes and consequences of uncertainty in supply chains. Risks in supply chains. Stability and security of supply chains locally at the global level. Reducing uncertainty in sup-



	Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»	Document Code	QMS NAU CTP 19.01-01-2020
		page 6 of 11	

ply chains. Construction of supply chains taking into account redundancy. Stability and adaptability of supply chains in the logistics environment. Adaptation as a property of supply chain models. Vitality and stability. The general logical scheme of decision-making on the choice of supply chain configuration, taking into account the factors of uncertainty and the possibility of violations. Organization of the functioning of supply chains taking into account the risk. Methods of sensitivity analysis of supply chains. Calculation of supply chain reliability and safety. Ways to reduce uncertainty, ensure the stability and stability of supply chains.

#### **Topic 5. Risk management and business processes in supply chains.**

The nature and types of risks in supply chains. Operation of supply chains in conditions of risk. Methodical approaches to the assessment of logistics risks in supply chains. Calculation and modeling of the level of reliability of supply chains. Models of logistics risk management in supply chains. Possibilities of comparing alternatives in terms of risk for supply chains. Decision making in conditions of risk. Comparison of alternatives in terms of risk. Analytical presentation of alternatives and risk consideration. Criteria for selecting alternatives in terms of risk in supply chains. Solution tree method for risk management in supply chains. Methods and models of redistribution and diversification of risks in supply chains. Risk management in supply chains based on insurance, hedging and redundancy. Functional and process approaches in supply chain management. The main business processes that exist in the supply chain. Decomposition of processes in the supply chain. Model of operations in the supply chain. Building an information model of the supply chain. Reference models of business processes in supply chains. Methods, approaches and software tools for modeling business processes in supply chains.

#### **Topic 6. Development and implementation of logistics strategies in supply chains.**

Logistics strategy and its role in ensuring the efficiency and effectiveness of the supply chain. Basic supply chain management strategies. Types and essence of strategies of integrated management and coordination of supply chains. Production-oriented strategies (Just-in-Time, Just-in-Sequence). Vendor Managed Inventory (VMI) replenishment strategies. Collaborative Planning, Forecasting and Replenishment (CPFR). Trade-oriented strategies (QR, ECR, CPFR). Channel-focused strategies. Strategies focused on speed. Strategies for individualized customer service. Cost management strategies. Strategies of operational dynamics. Development of logistics strategy taking into account the strategic goals of supply chains. Strategic supply chain benchmarking.

#### **Topic 7. Integration and cooperation in supply chains and information technology of supply chain management.**

Types and models of relationships between participants in the supply chain: cooperation, competition, cooperation. Strategic supply chain partnerships. Formation of partnerships based on relationship management with suppliers and consumers. Managing the processes of enterprise integration in supply chains. Organization of enterprise collaboration and strategic sourcing in supply chains. Outsourcing of logistics activities. The benefits of interorganizational collaboration in the supply chain. The chances and risks of the interaction strategy. The role, perspective and effectiveness of the application of information technology in supply chain management. Areas of application of information technology in supply chain management. Creation of a single information space for enterprises in supply chains. Modern information systems for monitoring the supply chain.

## Topic 8. Economic aspects of supply chain management. Global supply chain management.

The essence of integrated assessment of supply chain performance. Model for determining total costs within the entire supply chain. Financial indicators for evaluating the effectiveness of supply chains. Analysis of strategy and value for shareholders. Model-financial indicators of the supply chain based on value added. Features of determining economic efficiency and effectiveness in supply chains. Systems for measuring the economic efficiency of the supply chain. Balanced scorecard system and its use to evaluate the efficiency of the supply chain.

Trends towards globalization in supply chain management. Problems of global logistics. Organization of global logistics. Stateless companies and their role in the functioning of global supply chains. Global supply chain management. Approaches to the choice of domestic and international sources of supply and suppliers. Organization of international supply of goods and management of contracts with suppliers.

### 2.3. Training schedule of the subject.

№	Theme (thematic section)	Total, hours			
		Total	Lectures	Labs	Self-study
1	2	3	4	5	6
<b>Module №1 «Supply chain as a logistic form of organization of the management process»</b>					
1.1	Theoretical foundations of supply chain management.	<b>1 semester</b>			
		<b>11</b>	2	2	7
1.2	Design of supply chains.	<b>11</b>	2	2	7
1.3	Management decisions in supply chains.	<b>11</b>	2	2	7
1.4	“Decision making in supply chain management in conditions of uncertainty	<b>11</b>	2	2	7
1.5	Risk management and business processes in supply chains.	<b>11</b>	2	2	7
1.6	Development and implementation of logistics strategies in supply chains	<b>11</b> <b>10</b>	2 2	2 2	7 6
1.7	Integration and cooperation in supply chains and information technology of supply chain management	<b>12</b>	2 1	2	7
1.8	Economic aspects of supply chain management. Global supply chain management	<b>10</b>	-	-	10
1.9	Calculated and graphic paper	<b>11</b>	2	2	7
1.10	Module Test №1	<b>7</b>	-	1	6
<b>Total by the module №1</b>		<b>105</b>	<b>17</b>	<b>17</b>	<b>71</b>
<b>Total by the subject</b>		<b>105</b>	<b>17</b>	<b>17</b>	<b>71</b>

### 2.4. Calculated and graphic paper.

Calculated and graphic paper (CGP) of the subject is carried out in order to consolidate and deepen theoretical and practical knowledge and skills acquired in the process of mastering the educational material of the discipline in the field of aviation transport, which

	Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»	Document Code	QMS NAU СТР 19.01-01-2020
		page 8 of 11	

are used in the future in the study of many disciplines of the curriculum for professional training of specialists with basic and complete higher education.

The specific purpose of the task is to deepen the theoretical knowledge acquired by students in the process of studying the course and their application in the practical solution of the tasks. CGP consists of two parts. In the first part of the work the student must reveal the topic in the form of a report. The variant of the task is chosen according to the last digit of the individual curriculum of the student. The second part is experimental in nature, and consists in calculating the parameters of inventory management systems with a fixed order size and a fixed time interval between orders, determining the economic feasibility of transition from transit to warehousing and evaluation of suppliers to decide on the continuation of contractual relations.

Performance, registration and defense of CGP is carried out by the student individually according to methodical recommendations.

The time required to perform the CGP is 10 hours of Self-Study work

### 3. BASIC CONCEPTS OF GUIDANCE ON THE SUBJECT

#### 3.1. Teaching methods

The following teaching methods of subject guidance are

- explanatory and illustrative method;
- method of problem presentation;
- reproductive method;
- research method.

The implementation of these methods are carried out during lectures, demonstrations, self-study, work with the educational material, analysis of transport technologies issues.

#### 3.2. List of references (basic and additional)

##### Basic literature

3.2.1. ДСТУ ISO 28000:2008 «Системи управління безпекою ланцюга постачання. Вимоги» - К.: Держспоживстандарт України, 2015. - 14 с

3.2.2. ДСТУ ISO 31000:2018 «Менеджмент ризиків. Принципи та настанови» - К.: Держспоживстандарт України, 2018. - 16 с.

3.2.3. ДСТУ ISO 28001:2017 «Системи управління безпекою для ланцюга постачань. Настанова щодо впровадження ISO 28000» - К.: Держспоживстандарт України, 2017. - 18 с.

3.2.4. ДСТУ ISO 28004:2017 «Системи управління безпекою ланцюга постачання. Найкраща практика запровадження безпеки ланцюга постачання, оцінка та плани. Вимоги та настанови» - К.: Держспоживстандарт України, 2017. - 29 с.

3.2.5. Крикавський Є. Логістика та управління ланцюгами поставок: Навч. посібник / С.Крикавський, О.Похильченко, М. Фертч. — Львів: Видавництво Львівської політехніки, 2017. -844 с.

##### Additional Literature

3.2.6 Ільченко Н. Б. Логістичні стратегії в торгівлі: монографія / Н.Б. Ільченко. - Київ : КНТЕУ, 2016. - 431 с.

3.2.7. Колодізева Т.О. Управління ланцюгами поставок : навчальний посібник / Т. О. Колодізева. — Харків : ХНЕУ ім. С. Кузнеця, 2016. — 164 с.



3.2.8. Економіка логістики. За заг. ред. Є. В. Крикавського, О. А. Похильченко, Навчальний посібник / Є. В. Крикавський, О. А. Похильченко, Н. В. Чорнописька, О. С. Костюк, Н. Б. Савіна, С. М. Нікшич, Л. Я. Якимишин. Львів : Видавництво Львівської політехніки, 2014. - 640 с.

3.2.9. Paul A. Myerson. Supply Chain and Logistics Management Made Easy: Methods and Applications for Planning, Operations, Integration, Control and Improvement, and Network Design. Pearson FT Press; 1 edition (April 6, 2015), 353 pages.

### 3.3. Internet Information resource

3.3.1 Ukrzovnishtrans Association / <http://atfl.org.ua/>

3.3.2. European Logistics Association./ <http://www.elalog.org>

3.3.3. Ukrainian Logistics Alliance./ <http://www.ulaonline.org>

3.3.4. Distribution and Logistics Magazine. / <http://www.ukrlogistica.com.ua>

3.3.5. Logistics services. / <http://www.eurolog.com>

3.3.6. Logistics Association. / <http://www.clml.org>

## 4. RATING SYSTEM OF KNOWLEDGE AND SKILLS ASSESSMENT

4.1. Assessment of certain kinds of student academic work is carried out in accordance with table 4.1.


Table 4.1

Kind of Academic Work	Maximum Grade Values
<b>1 semester</b>	
<b>Module №1 « Supply chain as a logistic form of organization of the management process»</b>	
Carrying out Labs (6 g x 8)	48 (total)
Carrying out of Calculated and graphic paper	32
For admission to complete module test №1, a student must receive not less than	48
Module test №1	20
<b>Total by the module №1</b>	<b>100</b>
<b>Total by the subject</b>	<b>100</b>

**The Graded Test Grade** is determined (in grades and on a national scale) based on the results of all kinds of academic activities during the semester.

4.2. Completed types of educational work are credited to the student, if he received a positive rating for them.

4.3. The sum of rating assessments received by the student for certain types of completed academic work is the current modular rating assessment, which is recorded in the module control.

	Quality Management System. Course Training Program on «Supply Chains and Logistics Centers Management»	Document Code	QMS NAU CTP 19.01-01-2020
		page 10 of 11	

4.4. The Total Semester Grade is listed in the national and ECTS scale scores.

4.5. The final modular rating obtained by the student based on the results of the course defense and defense in points, on the national scale and ECTS scale is entered in the module control, as well as in the study card, individual student curriculum and Diploma Supplement, for example, as follows: **92 / Excellent / A, 87 / Good / B, 79 / Good / C, 68 / Sat./D, 65 / Sat./E, etc.**

4.6. The Total Grade for the subject is equal to the average grade from Total Semester Grades with its further transformation into national scale and ECTS system.

The Total Grade is recorded to the Diploma Appendix

(Ф 03.02 – 01)

**АРКУШ ПОШИРЕННЯ ДОКУМЕНТА**

№ прим.	Куди передано (підрозділ)	Дата видачі	П.І.Б. отримувача	Підпис отримувача	Примітки

(Ф 03.02 – 02)

**АРКУШ ОЗНАЙОМЛЕННЯ З ДОКУМЕНТОМ**

№ пор.	Прізвище ім'я по-батькові	Підпис ознайомленої особи	Дата ознайомлення	Примітки

(Ф 03.02 – 04)

**АРКУШ РЕЄСТРАЦІЇ РЕВІЗІЇ**

№ пор.	Прізвище ім'я по-батькові	Дата ревізії	Підпис	Висновок щодо адекватності

(Ф 03.02 – 03)

**АРКУШ ОБЛІКУ ЗМІН**

№ зміни	№ листа (сторінки)				Підпис особи, яка внесла зміну	Дата внесення зміни	Дата введення зміни
	Зміненого	Заміненого	Нового	Анульованого			

(Ф 03.02 – 32)

**УЗГОДЖЕННЯ ЗМІН**

	Підпис	Ініціали, прізвище	Посада	Дата
Розробник				
Узгоджено				
Узгоджено				
Узгоджено				