

(Ф 03.02 – 91)

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
National Aviation University
Faculty of Transport, Management and Logistics
Air Transportation Management Department

APPROVED

Rector

«__» _____ 2019



Quality Management System

SYLLABUS
on
«Efficiency of Air Transportation»

Field of Study: 27 «Transport»
Speciality: 275 «Air Transport Technologies»
Specialization: 275.04 «Air Transport Technologies»
Educational Professional Program: «Air Transportation Management»

Year of Study – 4 Semester – 7,8

Classroom Sessions – 75 Graded Test – 7 semester
Self-study – 120 Examination – 8 semester
Total (hours/ECTS credits) – 195/6,5
Term Paper – 8 semester

Index CB -6-275/16-3.1.27

QMS NAU S 19.01-01-2019



The Syllabus on «Efficiency of Air Transportation» is based on the Educational and Professional Program and Bachelor Curriculum № CB-6-275/16 for Speciality 275 «Air Transport Technologies», Specialization 275.04 «Air Transport Technologies», Educational Professional Program «Air Transportation Management» and correspondent normative documents and order №207/ОД of 27.04.2018.

access mode

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«___» _____ 2019

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«___» _____ 2019

Document level – 3b

The planned term between the revisions – 1 year

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1. EXPLANATORY NOTES

The Syllabus on «Efficiency of Air Transport» ” is developed on the basis of “Methodical instructions for development and issuance of syllabus and course training programs of the subjects” enacted by order as of 16.06.2015 №37/роз.

This subject is considered as a theoretical basis of knowledge and skills that form the expert’s profile in the field of transportation management and transport systems.

The subject target is provision of decision making by a specialist in the practice of the air transportations in the area of efficiency evaluation matters, organization and functioning of the air transportation elements.

Objectives to study the subject are:

- mastering theoretical calculations on performance evaluation;
- mastering of theoretical knowledge and practical skills in application of the methods of estimation of efficiency of air transportation.

As a result of mastering the subject a student shall **know**:

- definition of the concept of "efficiency";
- types of efficiency;
- methods of assessing the effectiveness of air transportation;

Learning outcomes:

- independently determine the performance criteria;
- independently develop models for assessing the effectiveness of air traffic for decision making;
- make calculations independently based on the models of performance evaluation using applications;
- analyze the results of the calculations using performance evaluation models and formulate recommendations for the decision maker.

Training material of the subject is structured according to a module principle and consists of two educational modules:

- educational module **№1 «Elements of Efficiency theory»;**
- educational module **№2 «Methods of determine efficiency of air transportation»;**

each of them is logically completed, independent, unique part of the subject, the mastering of which foresees conducting module test and analysis results of its carrying out.

Educational module **#3** is **Term Paper** that shall be completed in 8th semester. Term Paper is an important component of consolidating and deepening the theoretical and practical knowledge and skills acquired by the student in the process of mastering the course material.

The subject on «Efficiency of Air Transport» " is based on knowledge such subjects as: «Air Passenger Transportation», «Air Cargo Transportation» and is the basis for study of the subjects, as: «Technical and Economic Research of Transport Development», «Quality and Risk Management and Audit of Air Transportation Enterprises» etc.



2. SUBJECT CONTENT

2.1. Module №1 «Elements of Efficiency theory»;

Topic 2.1.1. The subject, purpose and main objectives of the discipline

The subject, purpose and main objectives of the discipline. Place of discipline in the system of training specialists. Rating system of knowledge assessment. Basic and additional literature.

Topic 2.1.2. The concept of efficiency in the organization of air transportation.

The essence of effect and effectiveness. Determination of efficiency. Types of efficiency. Absolute and relative efficiency.

Topic 2.1.3. Criteria for the effectiveness of air transportation.

Performance criteria. Methods for evaluating performance in multi-criteria tasks. Dimensionless performance criteria. Principle of rational management and cost-effectiveness criteria.

Topic 2.1.4. Economic efficiency.

Investment efficiency. Pareto efficiency. Elasticity coefficients in production functions. Relationship between the efficiency criteria and the discount rate and the final cost.

Topic 2.1.5. Technical efficiency.

Logistics efficiency, system efficiency. The specificity of the effectiveness of military systems. Efficiency in the life cycle of an aircraft. Weight ratio in aircraft design.

Topic 2.1.6. Efficiency management.

Efficiency of static, dynamic systems. Integral criteria in transport problems. Aviation example.

Topic 2.1.7. Extra-system efficiency.

Extra-transportation efficiency. Efficiency of logistic systems, outsourcing. Examples of non-traditional modes of transport.

Topic 2.1.8. Uncertainty factor and efficiency.

The nature of uncertainty in transport. Fuzzy sets. Methods of estimating performance under uncertainty.

Topic 2.1.9. A resource approach to ensuring air travel efficiency.

The role of the human factor in making an effective decision under uncertainty conditions.

2.2. Module №2 «Methods of determine efficiency of air transportation».

Тема 2.2.1. Overall performance indicators for airlines.

Overall metrics: number of flights per unit of cost of resources; profit per unit of total expenses; profitability of activity; share of increase of aviation services due to production intensification; the economic effect of the use of an air unit.

Topic 2.2.2. Indicators of efficiency of use of work (personnel).

Indicators of labor efficiency (staff): the rate of growth of labor productivity; the fate of the increase in air services by increasing labor productivity; absolute and relative dismissal of employees; utilization rate of working time fund; the complexity of the air unit; salary.



Topic 2.2.3. Indicators of efficiency of use of production funds and financial resources.

Indicators of the efficiency of the use of production funds: total investment; Funding of the active part of fixed assets; profitability of fixed assets; unit cost of production; material content of the unit of production; coefficient of use of the most important types of raw materials.

Indicators of efficiency of use of financial resources: turnover of working capital; profitability of working capital; relative release of working capital; specific capital investments (per unit of increase in capacity or services (air transportation), return on capital investments, payback period of capital investments, etc.

Topic 2.2.4. Methods and models for determining the technical effectiveness of air transportation.

Aircraft fleet capacity rating. Automation and mechanization performance. Determination of the region's availability of overhead lines. Airport capacity: Runway; the platform; terminals; driveways. Assessment of the level of mechanized and automated work on the basic processes of technological servicing of passengers and cargo at airports. Mathematical models for evaluating the efficiency of passenger and cargo service at airports by technical criteria.

Topic 2.2.5. Methods for determining the quality and operational efficiency of air transportation.

International and national regulation of the carriage of goods by air. Determination of aircraft performance, annual flight, flight speed. Average range of transportation. Determination of regularity of flights. Flight Safety Indicators. Model of determining the optimal route of transportation. Model of optimal distribution of aircraft fleet.

Topic 2.2.6. Methods for determining the economic efficiency of air transportation.

Determination of revenues, cost, profitability of air transportation. The task of managing flight profitability, real-time pricing (Yield Management models). Assessment of cost-effectiveness of aircraft leasing.

2.3. Module №3 «Term Paper».

Term Paper must be completed in 8th semester, in accordance with the methodological recommendations approved in the established order, in order to consolidate and deepen the theoretical knowledge and skills acquired by the student in the process of mastering all the educational material of the discipline. Execution of the Term Paper «Methods and models of assessment the efficiency of air transportation» is an important step in the preparation for the completion of the diploma project of a future specialist in the organization of transportation and management in transport. The coursework covers all stages of project preparation, including the construction and validation of methods and models for assessing the effectiveness of air traffic.

Execution and defense of the Term Paper is carried out by the student individually, according to the methodological recommendations.

Time, necessary for completion of the Term Paper – is up to 30 hours of individual work



3. LIST OF REFERENCES

3.1. Basic recommended sources

3.1.1. Костромина Е.В. Авиационный маркетинг - М.: НАУ ВКШ «Авиабизнес», 2003г. – 383с.

3.1.2. Экономика, организация и планирование гражданской авиации / Под ред. А.В. Мирошникова. – М.:Транспорт, 1983. – 240 с.

3.2. Additional recommended sources

3.2.1. Кулаев Ю.Ф. Экономическая оценка технических решений и инвестиционных проектов на воздушном транспорте: краткие методические рекомендации. – К.: КМУГА, 1996.

3.2.2. Яценко Л.А. Обоснование типового состава воздушных судов для авиалиний. – К.: КИИГА, 1985.

3.2.3. Яценко Л.А. Обоснование технологических схем комплексного транспортного обслуживания пассажиров и грузовой клиентуры. - К.: КИИГА, 1988. – 104 с.



(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				