



## Syllabus

### Course Program

# Quality Control Fundamentals

**Specialty**

274 – Automobile transport

**Educational program**

Automobiles and automobile Industry

**Level of education**

Master's level

**Semester**

2 (10)

**Institute**

Educational-scientific Institute of Mechanical Engineering and Transport

**Department**

Car and Tractor Industry (152)

**Course type**

Special (professional), Mandatory

**Language of instruction**

English, Ukrainian

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## Lecturers and course developers

**Vadym Shevtsov**

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Candidate of Technical Sciences, Associate Professor, Associate Professor of the Automobile and Tractor Engineering Department of KhPI National Technical University

Work experience - 12 years. Author of more than 40 scientific and educational methodological works. Leading lecturer in the disciplines: "Electro-hydraulic and pneumatic drives", "Methods of mathematical forecasting of changes in the technical condition of cars", "Fundamentals of optimization of car and tractor designs", "Fundamentals of quality management".

[More about the lecturer on the department's website](#)

**Oleksandr Ostroverkh**

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Candidate of technical sciences, associate professor, associate professor of the department of automotive and tractor construction of NTU "KhPI"

Work experience - 13 years. Author and co-author of more than 45 scientific and methodical publications.

Courses: "Controllability and stability of movement of cars and tractors", "Analysis of work processes of car systems", "Technology of structures of self-propelled machines".

[More about the lecturer on the department's website](#)

## General information

**Summary**

The tasks of the discipline are the study of quality management terminology, mastering the quality problem at the current stage and its impact on the economy, familiarization with the domestic and

international experience of quality management, the principles of creating and implementing quality management systems

### **Course objectives and goals**

The purpose of studying the discipline is the formation of students' knowledge of the theory and methodology of quality management, the principles of building and functioning of quality management systems for various types of products, including services, in particular in the field of road transport, familiarization with regulatory, legislative, organizational and economic issues with quality management..

### **Format of classes**

Lectures, practical work, independent work, consultations. Final control - credit.

### **Competencies**

FC 5 Ability to develop the structure and main elements of quality management at a motor vehicle enterprise.

### **Learning outcomes**

PRN 5 To know the structure and main elements of quality management at a motor vehicle enterprise, technical service stations and branded car services. Know and apply modern methods of quality control in practice..

### **Student workload**

The total volume of the discipline is 150 hours. (5 ECTS credits): lectures – 32 hours, Practical studies – 32 hours, independent work – 86 hours.

### **Course prerequisites**

Intellectual property, innovative enterprise and startup project management.

### **Features of the course, teaching and learning methods, and technologies**

Lectures are conducted interactively using multimedia technologies. In practical classes, a project approach to learning is used, attention is focused on the application of information technologies.

## **Program of the course**

### **Topics of the lectures**

Topic 1. Basic concepts and definitions Peculiarities of quality perception... Definition of the terms "product", "product quality", "process", "quality management", "compliance", etc.

Topic 2. Formulation of the purpose of the enterprise, determination of priorities of the directions of the enterprise's work

Topic 3. Domestic and international experience of quality management. Control and rejection of defective products. Measures to prevent shortages. The principle of building a product quality control system.

Topic 4. Quality indicators. Qualimetry. Information support of the product quality management system. Relationship between product quality and cost.

Topic 5. Features of the construction and operation of the quality management system. The role of personnel training in ensuring product quality. Stages of development of the quality management system. Total quality management, its purpose and means of implementation. Principles of quality management.

Topic 6. A systematic approach to the problem of quality management. Factors affecting product quality. The main ways of improving quality. Stages of quality assurance. Principles of system quality management. The main components of the quality management structure.

Topic 7. The need to develop and apply standards. Main international and national quality standards. Metrological assurance of product quality. The main methods of ensuring and stimulating quality, controlling the results of quality work.

Topic 8. Classic and modern methods of product quality management. Statistical and other methods of quality management. Organization of defect-free work. Dependence of economic indicators of production on the level of capital investments in quality management.

Topic 9. Legal responsibility for product quality. Documentary support of quality management systems.

Topic 10. Regulated and non-regulated area of product circulation. Justification of certification of quality systems. Quality system certification bodies. Certification procedure

Topic 11. Purpose of quality audit. Internal and external audit. Audit objects. Audit procedure. Use of audit results to improve the quality system.

Topic 12. The role of the company's marketing service in ensuring product quality. Service quality management system, including pre-sale product preparation, maintenance, repair, etc

### **Topics of the workshops**

Topic 1. Formulation of requirements for products of the enterprise of the motor vehicle industry from the point of view of ensuring its competitiveness

Topic 2. Development of measures to prevent product shortages of enterprises of the motor vehicle industry and means of product quality control.

Topic 3. Formulation of the main components of the quality management system at the enterprise of the motor vehicle industry

Topic 4. Comparative analysis of standards and other regulatory documents on quality assurance.

Analysis of existing quality management methods

Topic 5. Justification of the need for product certification of the enterprise of the motor vehicle industry.

Choosing a type of certification. Establishment of the quality audit procedure.

Topic 6. Formulation of the tasks of the marketing service of the enterprise of the motor vehicle industry regarding the improvement of the quality management system and product quality assurance.

### **Topics of the laboratory classes**

The program does not provide.

### **Self-study**

Students are also recommended additional materials (videos, articles) for independent study and analysis.

## **Course materials and recommended reading**

1. Ämitäva Mitra Fundamentals of quality control and improvement. Published by John Wiley & Sons, New Jersey, 229 p.
2. Dennis F. Kehoe The Fundamentals of Quality Management Department of Industrial Studies University of Liverpool, UK, 296 p.
3. British Standards Institution (1994) BS EN ISO 9000 Quality Systems Model for Quality Assurance, BSI.
4. Labovitz, G., Chang, Y.S. and Rosansky, V. (1993) Making Quality Work, Harper Business.
5. Besterfield, D.H. (1994) Quality Control, Prentice-Hall International
6. Bergman, B. and Klefsjo, B. (1994) Quality - From Customer Needs to Customer Satisfaction, McGraw-Hill
7. .Evans, J.R. and Lindsay, W.M. (1993) The Management and Control of Quality, West.

## Assessment and grading

### Criteria for assessment of student performance, and the final score structure

Description of the final score structure, course requirements, and necessary steps to earn points, especially paying attention to self-study and individual assignments.

### Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

## Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management. Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

## Approval

Approved by

30.08.2023

Head of the department  
Oleksii REBROV

30.08.2023

Guarantor of the educational  
program  
Mykola MITTSEL