COURSE DESCRIPTION CARD - SYLLABUS

Course name
Quality Engineering [S1Trans1>IJak]

Course

Field of study
Transport

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

KNOWLEDGE: the student has a basic knowledge of the design, manufacture and operation of vehicles and technical objects SKILLS: the student is able to integrate the obtained information, interpret it, draw conclusions, formulate and justify opinions SOCIAL COMPETENCES: the student is aware of the importance and understands the non-technical aspects and effects of transport activities

Course objective

Getting acquainted with the concepts of quality management and quality engineering instruments as well as the importance of the category of "quality" for the mobility of society, especially road transport, and learning the methods of influencing the quality level of transport services.

Course-related learning outcomes

Knowledge:
The student has ordered and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues in this discipline of transport engineering
The student has knowledge of important development trends and the most important technical

achievements and of other related scientific disciplines, in particular transport engineering
The student knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of an engineering nature engineering

Skills:
The student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods
The student is able to take into account in the process of formulating and solving tasks in the field of transport engineering also non-transport aspects, in particular social, legal and economic issues

Social competences:
The student understands that in technology, knowledge and skills very quickly become obsolete
The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life
The student correctly identifies and solves dilemmas related to the profession of a transport engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

1. The assessment takes place during the final class in the form of a test.
2. The test includes the following types of questions:
a) multiple-choice with one correct answer,
b) fill-in-the-blank,
c) open-ended.
3. The test consists of 20 questions, each scored as follows: 0 points for an incorrect answer, 1 point for a correct answer.
4. Time allocated for the test: 25 minutes.
5. In the case of using unauthorized sources during the written assessment:
• First warning: grade reduced by 1 level.
• Second warning: unsatisfactory grade (2.0).
6. Active participation in lectures adds +0.5 to a passing grade from the written assessment.
7. Completing an additional task for those wishing to expand their knowledge of the subject adds +0.5 to a passing grade from the written assessment.

Exercises:
1. Each task is graded.
2. Achieving a passing grade for each task is required to pass the exercises.
3. The average of all grades determines the final grade for the exercises.
4. In the case of absence, students must make up for the missed tasks.
5. Each absence from exercises must be justified.

Programme content

Quality - definitions, descriptive and comparative interpretation, quality attributes. Quality engineering - subject and scope. Quality cost classification and system.
Conditions for shaping quality in design, quality determinants in production, quality in operation and liquidation. Quality control tools.
Quality assurance and management. TQM: Deming rules, Japanese approach (5S, kaizen), EFQM model. Normative quality management. Process orientation in management
The specificity of the quality of services. Elements of the service quality system: structure, management responsibility, role of resources. Operational components of the service quality system.
Conditions and specificity of the quality of transport, including road transport. The quality of the transport service and the quality of the transport system. Conditions for the implementation of recycling and quality aspects in the assessment of vehicle recycling processes.
Quality quantification. Review of methods for assessing the quality of services and facilities. Comprehensive quality assessment methods. Principles of parameterization of quality criteria. Averaged quality marks methods. Qualitative assessment of selected objects: vehicles, elements of technical transport infrastructure or transport services.

Course topics

1. Basic concepts, history, tasks, and quality tools.
2. Different perspectives on quality. Total quality.
3. ISO 9001. TQM (Total Quality Management).
4. Ishikawa diagram. 5-Why method.
5. 5S analysis. Pareto analysis.
6. Deming's concept. Juran's Trilogy. Kaizen method.
7 wastes (muda). Six Sigma. Benchmarking. Just in Time.

Teaching methods

Lecture with a multimedia presentation, consultations supporting the development of the project. Exercises: Tasks to be solved during classes.

Bibliography

Basic
1. J.S. Oakland, Total Quality Management. Butterworth Heinemann, Amsterdam 2003
2. K. Ishikawa, What is total quality control? Prentice-Hall inc., Englewood Cliffs 1988
3. Hamrol A., Mantura W., Zarządzanie jakością, WN PWN, Warszawa 2009
4. Kolman R., Kwalitologia. Wyd. Placet, Warszawa 2009
5. Szczepańska K., Koszty jakości dla inżynierów. Wyd. Placet, Warszawa 2009
6. Grudowski P., Podejście procesowe w systemach zarządzania jakością w małych i średnich przedsiębiorstwach. Wyd. PG, Gdańsk 2007
Additional
1. Ch.-T. Su, Quality Engineering. CRC Press, Boca Raton 2013
2. T. Pfeifer, Quality management. Strategies, methods, techniques. Carl Hanser Verlag, Muenchen 2000
3. Womack J.P., Jonem D.T., Szczupłe rozwiązania. Wyd. Lean Enterprise Institute Polska, Wrocław 2010
4. Urbaniak M., Zarządzanie jakością, środowiskiem oraz bezpieczeństwem w praktyce gospodarczej. Wyd. Difin, Warszawa 2007
5. Kłos Z., Elementy inżynierii jakości i ekologii maszyn. Wyd. Politechniki Poznańskiej, Poznań 1998

Breakdown of average student's workload

	Hours	ECTS
Total workload	35	1,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	5	0,00