STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Quality Engineering		**1010622131010610240**
Field of study: **Mechanical Engineering**	Profile of study (general academic, practical): **(brak)**	Year /Semester: **2 / 3**
Elective path/specialty: **Internal Combustion Engines**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time): **full-time**	
No. of hours: Lecture: **1** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits: **1**
Status of the course in the study program (Basic, major, other): **(brak)**	(university-wide, from another field): **(brak)**	
Education areas and fields of science and art: **technical sciences**		ECTS distribution (number and %): **1 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has fundamental knowledge on mathematics, metrology, statistics, optimization and basics of machine construction.
2	**Skills**	Student possesses ability of use of knowledge in practical applications of quality, as well as ability of finding, interpretation and application of procedures of compulsory directives.
3	**Social competencies**	Student has ability of group work, interdisciplinary co-operation, is self-reliant and has ability of undertaking rational decisions.

Assumptions and objectives of the course:

-Transmitting to the students the knowledge of fundamental issues connected with European Union standards and regulations, like: ISO 9001, ISO 14001, ISO 18000 as well as requirements dealing with CE certification of goods.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has general knowledge in the field of standardization, recommendations and EU directives, international, national and industry standards in the area of quality. - [K2A_W09]
2. Has a basic knowledge of quality management systems. - [K2A_W15]
3. Has an extended knowledge of the standards for machines in the field of methods of calculation and testing, safety, including road safety, environmental protection as well as the mechanical and electrical interface. - [K2A_W21]

Skills:

1. Is able to develop a maintenance and safety manual for a designed machine or a vehicle from the selected equipment group. - [K2A_U12]
2. Is able to advise on the selection of machines within the selected equipment group, using quality valuation methods. - [K2A_U14]
3. Is able to assess potential negative impacts for the natural environment and humans, originating from the designed machine or a vehicle from the selected equipment group. - [K2A_U15]
4. Is able to develop technical description, market offer and design documentation for a complex machine from the selected equipment group. - [K1A_U16]

Social competencies:

1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others. - [K2A_K01]
2. Is aware of and understands the importance and impact of non-technical ? quality oriented ? aspects of mechanical engineering activities and its impact on the environment. - [K2A_K02]
3. Is able to interact in a group, taking on the different roles. - [K2A_K03]

Assessment methods of study outcomes

-Test control, case analysis

Course description

1.Term ?quality?, shaping of quality, quality costs - Quality ? definitions, interpretations, attributes of quality. Active shaping of quality. Classification of quality costs.

2.Quality management. Quantitative valuation of quality - Fundamentals of quality management. Quality assurance and quality management. Total Quality Management. Qualitative methods of quality valuation.

3. Review of standard systems of quality - Introduction to standard management of quality ISO 9000 family of standards ? structure and scope analysis. Documentations of ISO 9000 systems. ISO quality systems implementation into organizations.

4.Other standards - Environmental and safety standards ? structure and scope. Integrated systems of quality, environment and safety.

5.Producer responsibility - Regulations concerning legal responsibility of producer for the products. European conformity ? CE: principles, procedure of application and approval. Case studies of CE application. Principles of admission of goods to the commercial turnover: free and compulsory systems of conformity evaluation.

6. European accredition - European structure and system of accreditation. National and sector systems of conformity evaluation.

Basic bibliography:

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. What does the CE marking on a product indicate? European Union

Additional bibliography:

1. T. Pfeifer, Quality management. Strategies, methods, techniques. Carl Hanser Verlag, Muenchen 2002
2. Directive 93/68/EEC

Result of average student's workload

Activity	Time (working hours)
1. Lecture participation	15
2. Consolidation of lecture content	5
3. Consultation	2
4. Preparation for assessment	6
5. Assessment participation	2

Student's workload

Source of workload	hours	ECTS
Total workload	15	1
Contact hours	7	1
Practical activities	0	0