



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

TQM AND ELEMENTS OF INDUSTRY 6.0 CONCEPT [S5ILGIT>TQM]

### Course

Proposed by Discipline

–

Year/Semester

3/5

Level of study

Doctoral School

Course offered in

English

Form of study

full-time

Requirements

elective

### Number of hours

Lecture

0

Laboratory classes

0

Other

0

Tutorials

4

Projects/seminars

0

### Number of credit points

1,00

### Coordinators

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### Lecturers

prof. dr hab. inż. Zbigniew Kłos  
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### Prerequisites

KNOWLEDGE: Student has fundamental knowledge about management of organizations, specially about the role of quality issues in industrial applications and its influence on market success. SKILLS: Student possesses ability of perceiving and associating of phenomena occurring in management of market organizations and is able to interpret them, to draw conclusions and to formulate opinions. SOCIAL COMPETENCES: Student has the awareness of importance of quality issues and he/she understands the effects of undertaking of market oriented, quality and innovation sensitive activities in longer perspective.

### Course objective

Main goal - presenting and analyzing the main concurrency components existing between the elements of Industry 6.0 (also 5.0) and Total Quality Management (TQM), pointing out specially the positive role of TQM. Another goal - transmitting the knowledge about fundamental issues connected with connections between corporate culture category and quality issues and specially their role in foundations of Industry 6.0 (also 5.0).

### Course-related learning outcomes

KNOWLEDGE:

P8S\_WG

global achievements, covering theoretical foundations as well as general and selected specific issues that

are relevant to scientific disciplines studied at the Doctoral School, to the extent that enables revision of existing paradigms, SzD\_W01,  
principles of disseminating results of scientific activity, also in an open access mode, SzD\_W04.

#### P8S\_WK

fundamental dilemmas of the contemporary civilization, SzD\_W05,  
basic principles of knowledge transfer to the economic and social sphere as well as those of commercialization of results of scientific activities and know-how related to these results, SzD\_W07.

#### SKILLS:

##### P8S\_UW

use knowledge from different branches of science to creatively identify, formulate and innovatively solve complex problems or to perform research tasks such as:

- define the aim and subject of scientific research, form a research hypothesis,
  - develop research methods, techniques and tools and use them creatively,
  - draw conclusions on the basis of research results, SzD\_U01,
- transfer the results of scientific activity to the economic and social sphere, SzD\_U03.

##### P8S\_UK

communicate on specialist issues on the level that allows active participation in the international scientific community, SzD\_U04,  
use the English language on at least B2 level, according to the Common European Framework of Reference for Languages (CEFR), to a degree which allows active participation in the international scientific and professional community, SzD\_U08.

##### P8S\_UU

independently plan and act for their self-development as well as inspire and organize development of others, SzD\_U10.

#### SOCIAL COMPETENCES:

##### P8S\_KK

critically assess achievements within a given scientific discipline, SzD\_K01,  
acknowledge the importance of knowledge in solving cognitive and practical problems, SzD\_K03.

##### P8S\_KO

initiate actions in the public interests, SzD\_K05,  
think and act in an entrepreneurial manner, SzD\_K06.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The analysis of case studies connected with TQM and elements of Industry 6.0 and Industry 5.0 concept, and the preparatopn of real example of TQM implementation in Industry 6.0, as well as Industry 5.0, oriented enterprises.

### Programme content

Placing industry as a key sector of the economy development playing a central role in the development of societies. Review of different aspects of Industry 1.0 to 6.0, including the classification of the industrial revolutions and progression from 1.0 to 6.0.

Defining of fundamental terms, as "quality", "Total Quality Management", categories of "Industry" from Industry 1.0 to Industry 6.0 as well as specially different aspects of TQM in environment of Industry 6.0 (also Industry 5.0).

Presentation of specificity of TQM approach in different countries, especially in Japan in USA.

Consideration of essential elements and basic elements of corporate culture, with main phases of shaping of corporate culture. Presentation and analysis of influence of personalities - owners, presidents and/or directors on the process of shaping corporate culture in organizations, with analysis of cases.

### Course topics

Definition of the term "quality", driven by rising consumer expectations, more complex supply chains and strict regulations, which enterprises face, and looking to stop the pressure of needs.

Maintaining top-tier quality, which requires navigating several interconnected hurdles, among other Quality Planning, Continuous Improvement & Compliance, as well as specially TQM, in environment of Industry 6.0 (also 5.0).

Industry as a key sector of the economy encompassing all activities, dedicated to the large-scale production of goods and services, playing a central role in the development of societies, providing the resources and products needed for daily life and growth and fighting for higher quality.

Explaining of TQM as a comprehensive management philosophy and approach oriented on long-term organizational success and method of managing of organization, focused on quality, based mainly on cooperation of all employees, directed towards satisfaction of consumers and meeting requirements of employees.

Essential elements and basis of corporate culture. Main phases of shaping of corporate culture.

Presentation and analysis of influence of personalities on the process of shaping corporate culture in famous organizations with analysis of cases. Main actors shaping corporate culture and main benefits of mature corporate culture.

Industry 1.0 to 6.0 - the classification of the industrial revolutions – outlines the evolution of manufacturing from steam power to collaborative, human-machine ecosystems. The progression from 1.0 to 6.0, which reflects a move from manual labor to mass production, automation, digital connectivity and finally human-centric innovation.

## Teaching methods

Lecture with multi-media presentation including analysis of case studies dealing with TQM issues and elements of Industry 6.0 (also Industry 5.0) concept.

## Bibliography

### BASIC:

1. S. Nousala, G. Metcalf, D. Ing, Industry 4.0 to Industry 5.0. Explorations in the Transition from a Techno-economic to a Socio-technical Future. Springer Berlin 2024.
2. K. Swargiary, Education 6.0: Envisioning the Symbiotic Future of Learning and Innovation. Atlantis Publication House, 2025/2026.
3. From Industry 5.0 to 6.0: Future Skills for Human-Technology Collaboration in Sustainable Manufacturing", 2025.

### ADDITIONAL:

1. G. O'Donovan, The Corporate culture handbook. How to plan, implement and measure a successful culture change programme, The Liffey Press London 2006.
2. Th. G. Cummings, Ch. G. Worley, Organization development and change, 8th ed., Thomson, South-Western 2005.
3. Teaching entrepreneurship. Cases for education and training. Ed. P. van der Sijde et al. Physical Verlag, Heidelberg 2008.

## Breakdown of average student's workload

|                                                                                                                                                 | Hours | ECTS |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload                                                                                                                                  | 25    | 1,00 |
| Classes requiring direct contact with the teacher                                                                                               | 4     | 0,00 |
| Doctoral student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) | 21    | 1,00 |