GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Quality and chemical production management, PG_00069034						
Field of study	Chemical Technology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2029/2030			
Education level	first-cycle studies		Subject group	Obligatory subject group in the field of study			
Mode of study	Full-time studies		Mode of delivery	at the university			
Year of study	4		Language of instruction	Polish			
Semester of study	7		ECTS credits	2.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Karolina Kucharska					
	Teachers						

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	15.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	2.0	18.0	50

Subject objectives

The student masters the information related to the introduction of quality management systems in a company with a chemical profile. The student anticipates the effects of the activities carried out and is prepared for the critical selection of the quality management system, its implementation, and also uses the knowledge learned to conduct the audit.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W04] Possesses the technical knowledge necessary to analyze processes and design installations in the chemical industry.	Possesses the technical knowledge necessary to analyze processes and design installations in the chemical industry in accordance with current legal literature and technical requirements	[SW2] Assessment of knowledge contained in presentation
[K6_W05] Has knowledge of electrical engineering, automation and computer science, including the operation of measurement and control systems	has knowledge of electrical engineering, automation and computer science, including the operation of measurement and control systems, and is able to apply standards and guidelines to create validation and calibration protocols.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U06] Recognizes the relationships between technological issues and their impact on the environment, taking into account the principles of sustainable development, systemic and non-technical aspects, and occupational health and safety principles	updates knowledge and improves professional skills in the field of quality management systems, occupational health and safety, and environmental protection, collaborates in a team in a professional manner.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools

Subject contents	Course content – lecture History of Quality Management Systems. Discussing the Deming cycle and the risk-based approach. Principles of Good Manufacturing Practice Principles of Good Laboratory Practice Discussion of the assumptions of the ISO 9001: 2015 standard in relation to chemical production. Discussion of the assumptions of ISO 14001: 2015 in relation to chemical production Discussion of the assumptions of ISO 45001: 2018 in relation to chemical production Auditing techniques Audit plan, checklist and audit report. Course content – seminar Students prepare presentations in subgroups and participate in workshops on audit activities. Sample presentation topics: 1. Structural models of quality costs. The concept of A.V. Feigenbaum, the concept of J. Dahlgaard, K. Kristensen, and G.H. Kanji. 2. The structural model of quality costs according to the American Society for Quality Control (ASQC). 3. The concept of a risk-based structural model of quality costs based on the family of ISO standards. 4. Cause and Effect Analysis. Ishikawa Diagram. 5. G. Taguchi's quality loss function and Philip Crosby's "zero defects" principle. 6. Planning according to the production cycle. Structure. Systems. Optimization. 7. Production control based on Kanban cards. The 7x "none" principle. 8. Continuous process improvement in an organization. Reengineering and the Kaizen concept. 9. OEE in chemical production. Methods for determining equipment efficiency in practice. 10. Obligations of companies under the REACH and CLP regulations. Safety data sheets in chemical production.
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation	60.0%	35.0%
group work-report	60.0%	35.0%
test	60.0%	30.0%

Recommended reading	Basic literature	1. A. Hamrol *Zarządzanie jakością z przykładami*, PWN, Warszawa, **2007**. 2. B. Gajdzik, A. Wyciślik *Jakość, środowisko i bezpieczeństwo pracy w zarządzaniu przedsiębiorstwem*, Wyd. Pol. Śl., Gliwice, **2010**. 3. B. Hancyk *ADR, REACH, CLP Niebezpieczne chemikalia Poradnik*, Atest, Kraków, **2012**. 4. R. Wolniak, B. Skotnicka-Zasadzień *Zarządzanie jakością dla inżynierów*, Wyd. Pol. Śl., Gliwice, **2010**. 5. ISO 9001:2015 6. ISO 18001:2015 7. ISO 45001:2018 8. Crosby Ph., Quality is still Free, McGraw-Hill, New York **1996**.
	Supplementary literature	1. Deming E.W., Out of the Crisis, Massachusetts Institute of Technology, Cambridge **1982**. 2. Feigenbaum A.V., Total Quality Control, McGraw-Hill, Inc., New York **1991**. 3. Juran J.M., Gryna Frank M., Jr., Jakość projektowanie analiza, Wydawnictwo Naukowo-Techniczne, Warszawa **1974**. 4. Juran J.M., Juran`s Quality Control Handbook, McGraw-Hill, Inc., New York **1988**. 5. Taguchi G., Elsayed E.A., Hsiang T., Quality Engineering in Production Systems, McGraw-Hill, Inc., New York **1989**.
	eResources addresses	

Example issues/ example questions/ tasks being completed	**The student answers the questions of the presentation presented at the seminar, examples of questions:** 1. Health and safety requirements and fire protection in chemical production. 2. Basic legal acts in the field of waste management in the chemical industry 3. Types of audits. 4. Rules of the auditor's work. **Student prepares a multimedia presentation, examples of topics:** 1. Planning of material needs in chemical production. MRP method. 2. Principles of GLP Good Laboratory Practice according to the Regulation of the Minister of Health of May 22, 2013, Coll. 2013 item 665. 3. Production according to the principles of Good Manufacturing Practice GMP according to the Regulation of the Minister of Health of March 18, 2019, Journal of Laws 2019 item 728 4. Validation and verification of the process according to the principles of Good Manufacturing Practice GMP according to the Regulation of the Minister of Health of March 18, 2019, Journal of Laws 2019 item 728 5. Supervision over the quality of cosmetic products according to the Act OJ 2018 item 2227 **The student prepares a report on the task entrusted to him while working in a group, examples of tasks:** 1. Audit plan 2. List of control questions 3. Audit report
Practical activites within the subject	Workshops on standards and audits

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