GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Technical Analytics and Quality Control, PG_00048865		
Field of study	Engineering and Technologies of Energy Carriers		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	6.0
Learning profile	practical profile	Assessment form	exam
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Patrycja Makoś-Chełstowska	
	Teachers	dr inż. Patrycja Makoś-Chełstowska dr inż. Karolina Kucharska dr inż. Piotr Rybarczyk	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	60.0	0.0	0.0	90
	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	90	10.0	50.0	150

Subject objectives	General rules and selected specific procedures of technical and industrial analytics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U04	Theoretical and practical knowledge on the selection of methodology for conducting qualitative and quantitative research on individual energy carriers. Ability to adapt existing techniques and methods to new applications.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject
K7_U02	Theoretical and practical knowledge allowing verification of the correct implementation of complex processes and technologies on the basis of a planned cycle of research in the field of technical analytics and quality control.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
K7_W07	Theoretical and practical knowledge about the physicochemistry of individual research techniques and methodologies.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
K7_U01	Theoretical and practical knowledge of scope of analysis and interpretation of test results. Ability to predict test results based on knowledge of the characteristics of the tested material / sample.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

Subject contents

Technical analytics and quality control in the scope of engineering and technologies of energy sources.

Prerequisites and co-requisites

Knowledge of inorganic and organic chemistry as well as physical, analytical chemistry and chemical technology.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	60.0%	20.0%
Exam	60.0%	80.0%

Recommended reading

Basic literature	J.G. Speight, Handbook of Petroleum Analysis, WILEY-Interscience, 2015 J.G. Speight, Handbook of Coal Analysis, WILEY-Interscience, 2005 Standard test methods PN/EN, ASTM, GLP/GMP; PN-EN-ISO 9001; PN-EN-ISO/IEC 17025
Supplementary literature	1. Z. Witkiewicz, „Podstawy chromatografii" WNT, W-wa, 2005. 2. M. Kamiński (ed.) „ Chromatografia Cieczowa", CEEAM, Gdańsk, 2004. 3. J. Weiss, "Handbook of ion chromatography", vol. 1,2, Willey-VCH 2004. 4. W. Zieliński, A. Rajca (red.): „Metody spektroskopowe i ich zastosowanie do identyfikacji związków organicznych", WNT, W-wa, 1995. 5. J. Cazes (ed) "Encyclopedia on Chromatography", Marcel Dekker, New York, 2001 (or newer edition) 6. J. Namieśnik, P. Konieczka, Kontrola i zapewnienie jakości wyników pomiarów analitycznych, PTIE, 2006.
eResources addresses	Adresy na platformie eNauczanie: Analityka Techniczna i Kontrola Jakości - Wykład 2022/2023 - Moodle ID: 29593 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29593 Analityka Techniczna i Kontrola Jakości - Wykład 2022/2023 - Moodle ID: 29593 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29593

Example issues/ example questions/ tasks being completed	Lectures Module I. General rules of technical analytics and quality control Module II. Selected, most important techniques and methods for analysis of raw materials, process streams, products, auxiliary materials Module III. Quality assurance of data Laboratory Selected practical tasks in the scope of the subject.
Work placement	Not applicable