

1.	Field of study	Chemical Technology
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2024/2025 (winter term)
4.	Level of qualifications/degree	first-cycle studies (in engineering)
5.	Degree profile	general academic
6.	Mode of study	full-time

7. General information about the module	
Module name	Planning and optimization of the experiment
Module code	W4-TC-S1-6-POE
Number of the ECTS credits	2
Language of instruction	Polish
Purpose and description of the content of education	Moduł ma za zadanie zapoznać studenta z zagadnieniami związanymi z optymalizacją i planowaniem eksperymentów w ujęciu technologicznym. Po zakończeniu kursu student rozumie potrzebę optymalizacji eksperymentu i procesu, ma świadomość wpływu zewnętrznych czynników na przebieg procesu, jego wydajność, jakość uzyskiwanego produktu, etc. Potrafi argumentować zasadność stosowania tychże metod w praktyce i dostrzega tego realną potrzebę, w szczególności w aspekcie wdrażania zasad zielonej chemii i zgodności z nimi.
List of modules that must be completed before starting this module (if necessary)	[W4-TC-S1-1-MATA] Mathematics A [W4-TC-S1-2-MATB] Mathematics B

8. Learning outcomes of the module			
Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
W4-TC-S1-6-POE_01	Ma wiedzę w zakresie chemii wystarczającą do opisu zjawisk i procesów chemicznych.	TCh_W01	3
W4-TC-S1-6-POE_02	Zna podstawy statystyki.	TCh_W02	3
W4-TC-S1-6-POE_03	Posługuje się akuszem kalkulacyjnym Excel by wykonać stosowne obliczenia związane z planowaniem i optymalizacją eksperymentu implementując poznane podejścia.	TCh_W07	5
W4-TC-S1-6-POE_04	Posiada wiedzę na temat zasad zielonej chemii oraz zrównoważonego rozwoju.	TCh_W09	4
W4-TC-S1-6-POE_05	Interpretuje i krytycznie ocenia wyniki, a także potrafi przedstawić je w formie odpowiedniej prezentacji.	TCh_U01	4
W4-TC-S1-6-POE_06	Planuje i realizuje eksperymenty stosując zasady planowanie i optymalizacji eksperymentów, w tym zgodnie z zasadami zielonej chemii.	TCh_U05	5
W4-TC-S1-6-POE_07	Rozumie potrzebę poszerzania wiedzy, a także rolę interdyscyplinarnego podejścia do rozwiązywania problemów.	TCh_K04	4

9. Methods of conducting classes		
Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture <i>a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided</i>
b01	Problem-solving methods	Problem-based lecture <i>an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution</i>
b02	Problem-solving methods	Lecture-discussion <i>transmission of content involving interaction with the lecture audience; discussion of lecture-related issues is one of its elements or constitutes its follow-up</i>
b05	Problem-solving methods	Activating method – seminar / proseminar <i>a seminar method; usually an oral presentation of a previously studied/diagnosed problem delivered on a forum; it aims at provoking a discussion concerning the results of research work; a type of conference, course or training session modelled on seminar classes</i>
b07	Problem-solving methods	Activating methods: a case study <i>a comprehensive description of a phenomenon connected with the selected discipline; reflecting the reality, presenting the 'what', 'where' and 'how' of the phenomenon, i.e., all of its key aspects to be discussed in class; used as a reproduction, presentation, discussion or diagnosis of factors that shape the phenomenon or interact with it; an in-depth qualitative analysis and evaluation of a selected phenomenon</i>
c07	Demonstration methods	Screen presentation <i>a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image</i>
d01	Programmed learning methods	Working with a computer <i>e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline</i>
e06	Practical methods	Observation <i>also conducted as fieldwork; a method of watching phenomena, objects or people in a systematic/planned way in order to gain knowledge about them; perceptual separation of elements of a model action as an element of learning through imitation; a complex system of cognition based on sensory experiences</i>

10. Forms of teaching					
Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
W4-TC-S1-6-POE_sf_1	lecture	15	course work	W4-TC-S1-6-POE_01, W4-TC-S1-6-POE_02, W4-TC-S1-6-POE_03, W4-TC-S1-6-POE_04	a01, b01, b02
W4-TC-S1-6-POE_sf_2	laboratory classes	15	course work	W4-TC-S1-6-POE_05, W4-TC-S1-6-POE_06, W4-TC-S1-6-POE_07	b05, b07, c07, d01, e06

11. The student's work, apart from participation in classes, includes in particular:			
Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	Search for materials and review activities necessary for class participation <i>reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes</i>	No
a02	Preparation for classes	Literature reading / analysis of source materials <i>reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class</i>	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus <i>agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation</i>	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions <i>consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.</i>	Yes
d01	Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes <i>reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes</i>	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: <https://usosweb.us.edu.pl>.