

1.	Field of study	Mathematics
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2023/2024 (winter term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	part-time

7.	General information about the module	
Module name		Complex Analysis
Module code		W4-MT-N2-23-AZes
Number of the ECTS credits		6
Language of instruction		Polish
Purpose and description of the content of education		<p>Moduł obejmuje wykłady i ćwiczenia konwersatoryjne w zakresie zagadnień analizy zespolonej, leżącej u podstaw klasycznego wykształcenia matematycznego. Ramowy zakres modułu obejmuje następujące tematy:</p> <ol style="list-style-type: none"> 1. Liczby zespolone. Płaszczyzna domknięta. Granica, ciągłość, pochodna funkcji zespolonej; równania Cauchy'ego-Riemanna. Elementarne funkcje zespolone. 2. Całka funkcji zespolonej; całka krzywoliniowa. Funkcja pierwotna. Indeks. 3. Funkcje holomorficzne. Wzór całkowy Cauchy'ego; twierdzenie Cauchy'ego. 4. Niemal jednostajna granica funkcji holomorficznych; twierdzenie Weierstrassa. Szeregi potęgowe. Szeregi Laurenta. 5. Punkty osobliwe odosobnione. 6. Twierdzenie o residuach.
List of modules that must be completed before starting this module (if necessary)		not applicable

8.	Learning outcomes of the module			
Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)	
AZes_1	prezentuje gotowość do studiowania zagadnień i rozwiązywania zadań w ramach realizowanego modułu	K_K01	5	
AZes_2	prezentuje aktywność w dyskusji pojęć i faktów analizy zespolonej oraz w dążeniu do ich precyzyjnego formułowania i uzasadniania	K_K02 K_K05	4 4	
AZes_3	potrafi efektywnie wyrażać studiowane treści analizy zespolonej	K_U02	3	
AZes_4	zna podstawowe pojęcia i narzędzia analizy zespolonej	K_W01	3	
AZes_5	zna podstawowe twierdzenia obejmowane modułem	K_W03	3	
AZes_6	potrafi konstruować rozumowania by przeprowadzać dowody wybranych twierdzeń analizy zespolonej	K_U01 K_W02	3 3	

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>
b08	Problem-solving methods	Activating method – peer learning <i>learning through the exchange of knowledge in a group/team/pair of students, i.e., in the so-called learning cell; a kind of mutual learning; an approach focused on student activity under the guidance of the person teaching the course; a learning situation where students with a similar level of experience learn from one another</i>
e01	Practical methods	Laboratory exercise / experiment <i>[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment</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
AZes_fns_1	lecture	15	exam	AZes_3, AZes_4, AZes_5, AZes_6	a01
AZes_fns_2	discussion classes	30	course work	AZes_1, AZes_2, AZes_3, AZes_4, AZes_5	b08, e01

11. The student's work, apart from participation in classes, includes in particular:			
Code	Category	Name (description)	Is it part of the BUNA?
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>	Yes
a03	Preparation for classes	Developing practical skills <i>activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)</i>	Yes
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content <i>reading through the syllabus and getting acquainted with its content</i>	No
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>	No
b03	Consulting the curriculum and the organization of classes	Consulting the schedule <i>getting acquainted with the class schedule, possibly in the presence of the year tutor, in order to optimize participation in classes, including those supplementary to the core subjects listed in the</i>	No

		<i>pursued study programme</i>	
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes <i>devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.</i>	No

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>.