COURSE SPECIFICATION

Course code	full-time studies	**Z-ZB-E-108b**
	part-time studies	**-**
Course title in English	**Fundamentals of logic**	
Course title in Polish	**Podstawy logiki**	
Valid from academic year	**2025/2026**	

PLACEMENT IN THE TEACHING PROGRAM

Programme of study	**BUSINESS MANAGAMENT**
Level of education	**1st degree**
Studies profile	**academic**
Form and mode of study	**full-time programme**
Scope	**all**
Academic unit responsible for the course	**Department of Mathematics and Physics**
Course coordinator	**dr Marcin Stępień**
Approved by	**dr hab. inż. Dariusz Bojczuk, prof. uczelni**

GENERAL CHARACTERISTIC OF THE COURSE

Teaching block		**Subject of general education**
Course status		**Elective**
Language of instruction		**English**
Semester of delivery	full-time studies	**Semester I**
	part-time-studies	**-**
Prerequisites		**NO**
Exam (YES/NO)		**NO**
ECTS		**2**

Method of conducting classes		**lecture**	**classes**	**laboratory**	**project**	**other**
Number of hours per semester	full-time	**15**	**15**			
	part-time					

LEARNING OUTCOMES

Category	Outcome code	Course learning outcomes	Reference to the directional learning effect
Knowledge	W01	The student has basic knowledge of the classical calculus of sentences, set theory and relations. The student knows the rules of inference.	ZB1_W06 ZB1_W11
Skills	U01	The student is able to construct a natural language sentence diagram.	ZB1_U01
	U02	The student is able to verify the rules of inference and carry out correct inference.	ZB1_U01
	U03	The student is able to carry out reasoning that is logically correct.	ZB1_U01
Social competences	K01	The student understands the need and knows the opportunities to improve the acquired knowledge and skills in logic and multiplicity theory. The student grasps the elementary relationship between the workload and its result.	ZB1_K02
	K02	The student is aware of the responsibility for own work and willingness to submit to the principles of teamwork and bearing responsibility for jointly implemented tasks.	ZB1_K03

COURSE CONTENT

Method of conducting classes	Course content
lecture	Building natural language sentence patterns. Simple and complex sentences. Logical functors. Logical values of formulas. The concept of tautology. Methods of examining formulas: the zero-one method and the non-direct method. Rules of inference. Testing the correctness of inference. Method of inductive proof. Sets. Relationships between sets. Actions on sets. Laws of calculus of sets. Cartesian product. Relationships. Domain and field of relations. Actions on relations. Relationships between relations. Properties of relations. Equivalence relation. Classes of abstractions.
classes	Building natural language sentence patterns. Logical values of formulas. Methods of examining formulas: the zero-one method and the non-direct method. Rules of inference. Testing the correctness of inference. Method of inductive proof. Relationships between sets. Actions on sets. Laws of calculus of sets. Domain and field of relations. Actions on relations. Relationships between relations. Properties of relations. Equivalence relation. Classes of abstractions.

METHODS FOR VERIFYING LEARNING OUTCOMES

Outcome code	Learning outcomes verification methods					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
U01			X			
U02			X			
U03			X			
K01						X
K02						X

FORM AND CONDITIONS OF ASSESSMENT

Form of classes	Assessment type	Assessment Criteria
lecture	Credit with grade	Obtaining at least 50% of the points from the semester tests
classes	Credit with grade	Obtaining at least 50% of the points from the semester tests

STUDENT WORKLOAD

ECTS Balance								
No.	**Activity type**	**Student workload**					**Unit**
		full-time					
1.	Scheduled contact hours	W	C	L	P	S	h
		15	**15**				
2.	Other (consultations, exams)	**2**	**2**				h
3.	**Total number of contact hours**	**34**					h
4.	**Number of ECTS credits for contact hours**	**1,4**					ECTS
5.	**Number of hours of independent student work**	**16**					h
6.	**Number of ECTS points that a student obtains through independent work**	**0,6**					ECTS
7.	**Workload related to practical classes**	**25**					h
8.	**Number of ECTS credit points which a student receives for practical classes**	**1,0**					ECTS
9.	**Total number of hours of a student's work**	**50**					
10.	**ECTS credits for the course** *1 1 ECTS credit =25 student learning hours*	**2**					ECTS

W - LECTURE C – CLASSES L – LABORATORY P- PROJECT S – SEMINAR

READING LIST

1. K. Kuratowski; A. Mostowski (ed.), Studies of Logic and Foundations of Mathematics, Polish Academy of Sciences. Volume 53,. Pages ii-xiv, 1-417 (1968)
2. S. Lupenko, O. Volianyk, Logic and set theory : textbook, Oficyna Wydawnicza Politechniki Opolskiej, 2024
3. W. Marek, J. Onyszkiewicz, Elements of logic and Foundations of Mathematics in Problems, PWN Warszawa 1982.
4. M. Walicki, Introduction to mathematical logic, World Scientific Publ.; Edycja Illustrated, 2011
5. M. Zegarelli, Logic for dummies, John Wiley & Sons, 2006