

LEARNING OUTCOMES FOR DOCTORAL DEGREE IN *MATHEMATICS*

Code	Upon successful completion of doctoral studies in <i>mathematics</i> , graduates:
KNOWLEDGE	
K_W01	have an in-depth knowledge in the field of advanced branches of mathematics based on monographs and scientific papers related to the contents of lectures, seminars and the topic of their doctoral dissertations in progress
K_W02	know different proving techniques
K_W03	know relations between the academic discipline they specialize in and other branches of theoretical and applied mathematics, as well as other disciplines of knowledge
K_W04	have basic knowledge of the law and ethics related to scientific research activities, teaching, and copyright law
K_W05	have achieved English language proficiency equivalent to level B2+ of European Framework of Reference for Languages and sufficient to read and understand scientific papers
K_W06	have knowledge of current developments and recent research results in mathematics
K_W07	know various teaching methods, including the use of modern technologies
SKILLS	
K_U01	are able to construct complex mathematical reasoning: prove theorems and refute hypotheses by means of generating and choosing counterarguments
K_U02	are proficient in using the language of mathematics; are able to substantively present problems discussed in lectures, doctoral seminars, and their doctoral dissertations in progress
K_U03	are able to develop research hypotheses and precisely formulate research questions, which will be used to deepen their understanding of the branch of mathematics discussed in lectures and in their doctoral dissertations in progress
K_U04	have increased language proficiency (English) relevant to the language of mathematics, meeting the requirements for level B2+ of European Framework of Reference for Languages
K_U05	are able to obtain necessary information from professional literature and scientific journals independently

K_U06	are able to prepare conference presentations, in English and Polish, concerning chosen branches of mathematics
K_U07	are able to use modern technologies in the teaching process
SOCIAL COMPETENCES	
K_K01	graduates understand the need for lifelong education
K_K02	are able to work in a team and understand the importance of systematic work
K_K03	understand and appreciate the significance of intellectual honesty, both in their own and in other people's activities
K_K04	are able to formulate opinions concerning basic mathematical issues
K_K05	understand the importance of reading scientific papers in order to keep up to date with current research and in order to deepen their knowledge
K_K06	are able to set priorities necessary to carry out and accomplish a given task
K_K07	in a very responsible way prepare for their future job as a university teacher; design and carry out educational activities

