Syllabus

Course Description

Course Title	OFA "Logical-mathematical competence"
Course Code	400035
Course Title Additional	
Scientific-Disciplinary Sector	NN
Language	German
Degree Course	5 year master degree in Primary Education - German section
Other Degree Courses (Loaned)	
Lecturers	Dr. Alexander Ebner, Alexander.Ebner@unibz.it https://www.unibz.it/en/faculties/education/academic-staff/person/55429
Teaching Assistant	
Semester	First semester
Course Year/s	1
CP	0
Teaching Hours	16
Lab Hours	0
Individual Study Hours	0
Planned Office Hours	0
Contents Summary	The course comprises four four-hour face-to-face workshops on logical-mathematical topics. Problem-solving activities in small groups, joint mathematical discussions and the use of analogue and digital teaching materials are planned.
Course Topics	The course content includes the representation of natural numbers, an in-depth examination of the properties of arithmetic operations and an introduction to basic algebraic concepts. In addition, various strategies of mental arithmetic and written arithmetic are covered. The aim is to develop conscious, flexible and efficient calculation methods. Part of the activities is dedicated

	to the investigation of objects in plane and space as well as to the acquisition of basic geometric knowledge. In addition, mathematical problem-solving strategies are deepened, whereby different solutions are explored, compared with each other and reflected on together. Other content concerns the acquisition, ordering, representation and interpretation of data as well as fundamental aspects of logic and mathematical argumentation. These are intended to support participants in formulating hypotheses, justifying their own decisions and developing clear, conclusive mathematical thinking.
Keywords	Numbers, arithmetic operations, written calculations and mental arithmetic, geometric shapes, problem-solving, data representation, logical reasoning and argumentation.
Recommended Prerequisites	
Propaedeutic Courses	
Teaching Format	In-person attendance, work in small groups.
Mandatory Attendance	In accordance with the regulation
Specific Educational Objectives and Learning Outcomes	Knowledge and Understanding: - Identifying the nature of the problem. - Recognizing an appropriate method to solving it. - Knowledge of the relevant mathematical laws and formulas. Applying knowledge and understanding: - Execute the solution by following a logical sequence of individual steps. Judgement: - Correct interpretation of the solutions and verification of their validity. Communication: - Present the solutions developed using precise technical language. Learning Strategies: - Generalize specific problems and identify connections to similar problems that require similar solutions. - Independently research and evaluate additional literature and materials.

Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	Written assignment
Evaluation Criteria	Understanding the task, knowledge of the relevant arithmetic laws and formulas, an effective solution strategy and logically consistent execution of the individual steps, correct interpretation of the solutions, and checking whether they are reasonable.
Required Readings	Jan Boesten Die Mathe-Knobel-Kartei: Fermi-Aufgaben, Klasse 3-6 Open-ended problems in three levels of difficulty with solution guides
Supplementary Readings	
Further Information	
Sustainable Development Goals (SDGs)	Quality education