COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE PROGRAM		
COURSE CODE	**311-4100**	**SEMESTER**	**H**
COURSE TITLE	PHILOSOPHY OF MATHEMATICS		
INSTRUCTOR			

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	6

COURSE TYPE	Special background
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	https://www.math.aegean.gr/index.php/en/education/undergraduate-programs

(2) LEARNING OUTCOMES

Learning outcomes
Bibliographic knowledge and familiarity with the fundamental issues addressed by the philosophy of mathematics (e.g., the problem of the foundation and legitimization of mathematical knowledge). Understanding of the principal 20th-century currents in the Philosophy of Mathematics, such as Logicism, Formalism, and Intuitionism. Ability to produce written discourse on these topics, including critical analysis of arguments supporting or opposing specific viewpoints. Development of a comprehensive perspective on mathematics and its foundational challenges, thereby enriching one's understanding of the scientific discipline they engage with. This entails synthesizing knowledge to formulate informed positions on the nature of mathematical truth, methodology, and epistemology, ultimately fostering a deeper integration of philosophical inquiry with mathematical practice.
General Competences
Working independently. Team working. Working in an interdisciplinary environment.

(3) SYLLABUS

Perspectives of ancient thinkers on the nature of numbers and their theories of mathematics (e.g., Pythagoreans, Plato). The role of mathematics in the 16th–17th centuries. The Geometric paradigm. The crisis of this paradigm and the emergence of non-Euclidean geometries. The legitimization imperative. Frege's conceptual framework. Russell's Logicism. The axiomatization of arithmetic, geometry, and set theory (Hilbert, Zermelo). Intuitionist mathematics (Brouwer). The critique of the legitimization imperative (Gödel). The necessity of a philosophy of mathematics (Shapiro).

TEACHING MATERIAL DISTRIBUTION	The teaching material of the course is uniformly distributed during the semester.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY</td><td>Face-to-face lectures</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</td><td>• Communication with students via e-mail.
• Uploading course material on moodle system.</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>52</td></tr>
<tr><td>Independent Study</td><td>98</td></tr>
<tr><td>Course total (25 per ECTS)</td><td>150</td></tr>
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<tr><td>COURSE COMMITMENTS</td><td>Attending course is not obligatory.</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION</td><td>Student’s evaluation is done in Greek through a written examination. For students with disabilities, evaluation takes place via oral exams.</td></tr>
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(5) ATTACHED BIBLIOGRAPHY

1. Δ. Αναπολιτάνος, Εισαγωγή στη Φιλοσοφία των Μαθηματικών, Νεφέλη, 2009.
2. Γ. Ρουσόπουλος, Επιστημολογία των Μαθηματικών, Οκτώ, 2022.
3. St. Shapiro, Thinking about Mathematics, Oxford University Press, 2000.