

# TEACHING OF MATHEMATICS

## 1. GENERAL

<b>SCHOOL</b>	SCHOOL OF ENGINEERING		
<b>DEPARTMENT</b>	CIVIL ENGINEERING		
<b>LEVEL OF STUDIES</b>	POST-GRADUATE, LEVEL 7		
<b>COURSE CODE</b>		<b>SEMESTER</b>	1 <sup>ST</sup> SEMESTER
<b>COURSE TITLE</b>	TEACHING OF MATHEMATICS		
<b>TEACHING ACTIVITIES</b> <i>If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.</i>		<b>TEACHING HOURS PER WEEK</b>	<b>ECTS CREDITS</b>
		3	7,5
<i>Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.</i>			
<b>COURSE TYPE</b> <i>Background, General Knowledge, Scientific Area, Skill Development</i>	General Knowledge		
<b>PREREQUISITES:</b>	None		
<b>TEACHING &amp; EXAMINATION LANGUAGE:</b>	Greek		
<b>COURSE OFFERED TO ERASMUS STUDENTS:</b>	No		
<b>COURSE URL:</b>	<a href="https://eclass.duth.gr/courses/1031588/">https://eclass.duth.gr/courses/1031588/</a>		

## 2. LEARNING OUTCOMES

<p><b>Learning Outcomes</b></p> <p><i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i></p> <p>After the successful completion of this course, the post-graduate students will be able:</p> <ul style="list-style-type: none"> <li>• To learn the principles of education</li> <li>• To understand the problems of the teaching of Mathematics</li> <li>• To study contemporary methods of the teaching of Mathematics</li> <li>• To apply these methods via presentations of virtual courses</li> <li>• To study teaching methods in Analysis, Algebra and Number Theory</li> <li>• To study teaching methods for bridging the gap between secondary education and postgraduate studies.</li> </ul>
<p><b>General Skills</b></p> <p><i>Name the desirable general skills upon successful completion of the module</i></p> <p><i>Search, analysis and synthesis of data and information, Project design and management</i></p>

<i>ICT Use</i>	<i>Equity and Inclusion</i>
<i>Adaptation to new situations</i>	<i>Respect for the natural environment</i>
<i>Decision making</i>	<i>Sustainability</i>
<i>Autonomous work</i>	<i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i>
<i>Teamwork</i>	<i>Critical thinking</i>
<i>Working in an international environment</i>	<i>Promoting free, creative and inductive reasoning</i>
<i>Working in an interdisciplinary environment</i>	
<i>Production of new research ideas</i>	

- Search, analysis and synthesis of data and information, ICT Use.
- Adaptation to new situations.
- Decision making.
- Autonomous work.

### 3. COURSE CONTENT

PART A: Basic teaching principles. Principle of supervision. Principle of self-reliance. Principle of individuality. Principle of topicality. Principle of sociability. Principle of encouragement. Principle of interaction. Teaching models: teacher-centered model, student-centered model. Classifications of teaching objectives. The modernization of mathematics teaching. Aims and objectives of mathematics education. Presentations of virtual courses.

PART B: Applied teaching of Mathematics. Indicators and their necessity. Elements of mathematical logic and its necessity. Teaching Methods on Mathematical Analysis. Teaching Methods in Algebra. Teaching methods of number theory. Teaching methods for bridging the gap between secondary education and postgraduate studies.

### 4. LEARNING & TEACHING METHODS - EVALUATION

<b>TEACHING METHOD</b> <i>Face to face, Distance learning, etc.</i>	Live distance learning	
<b>USE OF INFORMATION &amp; COMMUNICATIONS TECHNOLOGY (ICT)</b> <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i>	Use of ICT in teaching and in communication with the students	
<b>TEACHING ORGANIZATION</b> <i>The ways and methods of teaching are described in detail.</i>  <i>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research &amp; analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.</i>  <i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i>	<b>Activity</b>	<b>Workload/semester</b>
	Lectures	39
	Bibliographical research and study	78
	Assignments during the course	30
	Final written exam	3
	<b>Total</b>	<b>150</b>
<b>STUDENT EVALUATION</b>	Assignments during the course.	

<p><i>Description of the evaluation process</i></p> <p><i>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others</i></p> <p><i>Please indicate all relevant information about the course assessment and how students are informed</i></p>	<p>Presentations of virtual courses.</p> <p>Final written exam.</p>
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## **5. SUGGESTED BIBLIOGRAPHY**

<ol style="list-style-type: none"> <li>1. J. Bruner, <i>The Process of Education</i>, Harvard University Press, 1960.</li> <li>2. R. M. Gagne, <i>The conditions of learning</i>, New York: Holt, Rinehart &amp; Wilson 1970</li> <li>3. Γ. Φιλίππου - Κ. Χρίστου, <i>Διδακτική των Μαθηματικών</i>, Εκδόσεις Γ. Δαρδανος, Αθήνα 2004.</li> <li>4. Αθ. Γαγάτσης, <i>Διδακτική των Μαθηματικών, Θεωρία – Έρευνα</i>, Εκδόσεις Art of Text A.E., Θεσσαλονίκη.</li> <li>5. Αθ. Γαγάτσης, <i>Θέματα Διδακτικής των Μαθηματικών</i>, Εκδόσεις Κυριακίδη, Θεσσαλονίκη, 1993.</li> <li>6. Θ. Γ. Εξαρχάκος, <i>Διδακτική των Μαθηματικών</i>, Εκδόσεις Ελληνικά Γράμματα, Γ Έκδοση.</li> </ol>
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## ANNEX OF THE COURSE OUTLINE

### Alternative ways of examining a course in emergency situations

<b>Teacher (full name):</b>	Prof. Christos Schinas Prof. Vasilis Papadopoulos
<b>Contact details:</b>	Email: <a href="mailto:cschinas@ee.duth.gr">cschinas@ee.duth.gr</a> , Telephone: +30 25410 79763 Email: <a href="mailto:papadob@civil.duth.gr">papadob@civil.duth.gr</a> , Telephone: +30 25410 79747
<b>Supervisors: (1)</b>	No
<b>Evaluation methods: (2)</b>	Students are evaluated via written assignments during the course and a written final assignment.
<b>Implementation Instructions: (3)</b>	The course is given via live distance learning and emergency situations will not affect lectures and student evaluation.

(28) Please write YES or NO

(29) Note down the evaluation methods used by the teacher, e.g.

6. *written assignment* or/and exercises

7. written or oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.

(30) In the **Implementation Instructions** section, the teacher notes down clear instructions to the students:

a) in case of **written assignment and / or exercises**: the deadline (e.g. the last week of the semester), the means of submission, the grading system, the grade percentage of the assignment in the final grade and **any other necessary information**.

b) in case of **oral examination with distance learning methods**: the instructions for conducting the examination (e.g. in groups of X people), the way of administration of the questions to be answered, the distance learning platforms to be used, the technical means for the implementation of the examination (microphone, camera, word processor, internet connection, communication platform), the hyperlinks for the examination, the duration of the exam, the grading system, the percentage of the oral exam in the final grade, the ways in which the inviolability and reliability of the exam are ensured and any other necessary information.

c) in case of **written examination with distance learning methods**: the way of administration of the questions to be answered, the way of submitting the answers, the duration of the exam, the grading system, the percentage of the written exam of the exam in the final grade, the ways in which the integrity and reliability of the exam are ensured and any other necessary information.

There should be an attached list with the Student Registration Numbers only of students eligible to participate in the examination.