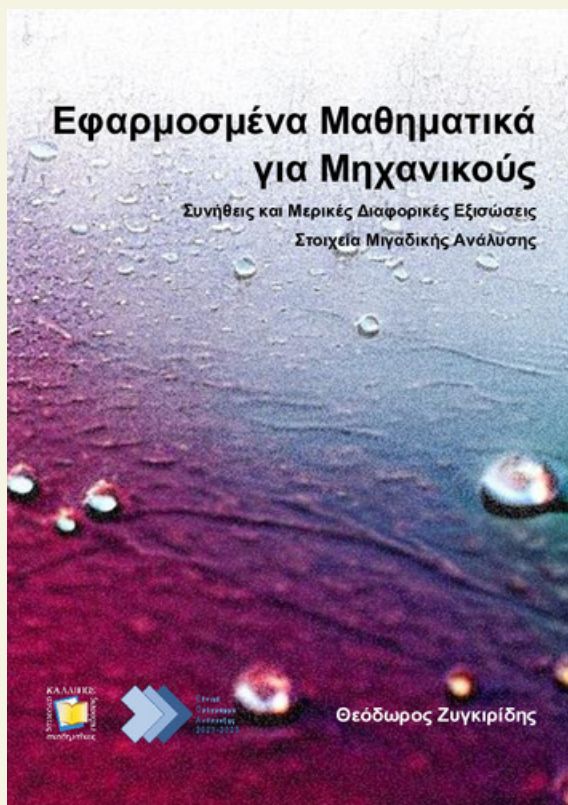




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Abstract

This textbook aims to study various fundamental aspects of Applied Mathematics, by pursuing a presentation methodology that is suitable for undergraduate students of Engineering Departments and Schools. Emphasis is placed on both the simple presentation of theory and the process of solving relevant problems, while maintaining the necessary mathematical rigor. In particular, each chapter of the book includes the necessary theoretical background, solved examples, illustrative figures, exercises with their answers and relevant bibliography. The topics of the book are broken down into three sub-topics: ordinary differential equations, differential equations with partial derivatives and complex analysis. In particular,

ordinary differential equations include the topics of first-order differential equations, higher-order differential equations, solving equations using the Laplace transform, solving equations using power series, systems of linear differential equations and numerical solution of differential equations. The part of the book dealing with partial differential equations studies first-order equations, canonical forms of second-order linear equations, eigenvalue problems, Fourier series and integrals, and problems with Laplace's equation, the diffusion equation and the wave equation. Finally, the part of complex analysis includes complex numbers, complex functions, their differentiation and integration.

