Preface

Structural Analysis is a basic course for undergraduate students with majors in civil engineering, engineering mechanics, flight vehicle design, mechanical engineering, naval architecture, ocean engineering, etc., and is also an introductory course for undergraduates to learn and master the analysis and design of various beam, truss, frame, arch and composite structures for buildings, bridges and flight vehicles and so on. This textbook includes eight chapters and covers an introduction (chapter 1), kinematic analysis of plane member systems (chapter 2), analysis of statically determinate structures (chapter 3), principle of virtual work and deflection calculation (chapter 4), force method (chapter 5), displacement method (chapter 6), influence lines of structures under moving loads (chapter 7), and matrix displacement method (chapter 8). Chapters 5, 6, and 8 focus on addressing the analysis of statically indeterminate structures.

The present textbook emphasizes the fundamental theories, concepts, computational methods, and engineering applications of structural analysis. During the preparation of this book, we referred to many excellent textbooks and made efforts to renew some contents and reflect the time trends of digitalization and informatization. The main features of this textbook lie in the following aspects: (1) strengthened the interestingness and readability, and increased the brief introduction on the developmental history of structural analysis and the important figures; (2) substituted the kinematic method to construct exactly and rapidly the influence lines of forces of statically indeterminate structures proposed by the authors for the corresponding old knowledge, and highlighted the energy principle and method; (3) increased introducing the backgrounds of engineering applications for some theories and methods of structural analysis; (4) from the viewpoints of history, methodology, aesthetic appreciation, and creative thinking, inspected the structural analysis and strived to integrate the knowledge, capability and quality education to cultivate the innovative talents.

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We will appreciate comments and suggestions from the readers to improve the current edition. All constructive criticisms are welcome with gratitude.

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