

Preface

Engineering basic Mechanics is an important professional foundation course in higher education institutions. With the internationalization of higher education in China, a number of Sino-foreign cooperative schools have emerged, and some institutions have carried out bilingual teaching of the course. Since there are relatively few English textbooks for engineering basic mechanics, some universities directly adopt Chinese textbooks, which cannot meet the needs of bilingual teaching. Some other institutions directly use multiple English textbooks, resulting in the increasing of the burden of students and the lack of relevance of the knowledge system, and the order and focus of the content is very different from the domestic teaching process. Referring to a large number of excellent textbooks at home and abroad, this textbook is prepared in accordance with the characteristics of the domestic curriculum and the process of teaching the knowledge system, and on the basis of meeting the requirements of engineering basic mechanics in higher education.

This set of textbook is divided into two parts: I Statics and II Dynamics. This book is Dynamics part, including 10 chapters. Chapters 1~4 are about kinematics, and mainly focus on how to describe the motion of a particle and rigid body from a geometric point of view. Chapters 5~8 are about dynamics, and mainly focus on the relationship between change in the motion of an object and the force acting on it. Chapter 9 is the fundamentals of analytical mechanics, which understands the dynamics problem from another perspective. The basic concept of vibration is introduced in Chapter 10.

This set of textbook combines the characteristics of excellent foreign and domestic textbooks and has some of the following features and characteristics:

1. Concise language. Strive for concise language on the basis of satisfying professional knowledge, and try to simplify the impact of language on the learning process and reduce the burden on students.
2. Reasonable knowledge system. Based on foreign classical textbooks, the equilibrium force analysis and material deformation are compiled together as the Statics part, and the kinematics and dynamics are compiled together as the Dynamics part. The knowledge structure and emphasis of the two parts are consistent with the domestic mechanics courses.
3. Focus on application. Absorb the advantages of foreign textbooks to simplify some of the complex mathematical derivation process, and strengthen the engineering background and practical application analysis process. Each chapter is equipped with a large number of practical engineering examples and exercises to improve the ability about how to solve practical problems.

The authors of this textbook include Li Chenliang (preface and chapters 1~4), Wang Chaoying