

<<结构力学>>

图书基本信息

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内容概要

本书是在英文原版《结构力学》基础上，参考了多部国内优秀教材并按照学生熟知的框架体系编写而成。

全书共10章，基本涵盖了本科结构力学的经典内容（不含结构动力学内容），书中附有大量详实的配图、习题，便于学生准确理解概念，真正做到了理论联系实际。

本书作为结构力学双语教学的教材或课外辅导教材，供本科生使用。

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章节摘录

版权页：插图： 1.1 Introduction With few exceptions, structures must be stable under all conditions of load ; that is, they must be able to support applied loads (their own weight, anticipated live loads, wind, and so forth) without changing shape, undergoing large displacements, or collapsing. Since structures that are stable do not move perceptibly when loaded, their analysis—the determination of both internal and external forces (reactions)—is based in large part on the principles and techniques contained in the branch of engineering mechanics called statics. The subject of statics, which you have studied previously, covers force systems acting on rigid bodies at rest (the most common case) or moving at constant velocity; that is, in either case the acceleration of the body is zero. Although the structures we will study in this book are not absolutely rigid because they undergo small elastic deformations when loaded, in most situations the deflections are so small that we can (1) treat the structure or its components as rigid bodies and (2) base the analysis on the initial dimensions of the structure. We begin this chapter with a brief review of statics. In this review we consider the characteristics of forces, discuss the equations of static equilibrium for two-dimensional (planar) structures, and use the equations of static equilibrium to determine the reactions and internal forces in a variety of simple determinate structures such as beams, trusses, and simple frames. We conclude this chapter with a discussion of determinacy and stability. By determinacy, we mean procedures to establish if the equations of statics alone are sufficient to permit a complete analysis of a structure. If the structure cannot be analyzed by the equations of statics, the structure is termed indeterminate. To analyze an indeterminate structure, we must supply additional equations by considering the geometry of the deflected shape. Indeterminate structures will be discussed in later chapters.

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