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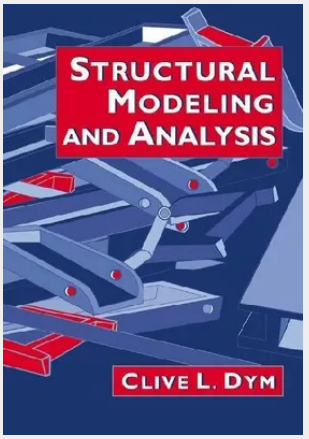
Structural Modeling and Analysis



The study of structural analysis and design is a central subject in civil, aeronautical and mechanical engineering. This book presents a modern and unified introduction to structural analysis, with a strong emphasis on how structures actually behave. The unifying theme is the application of energy methods, developed without the formal mathematics of the calculus of variations. The energy approach makes it possible to articulate the logical relationship between equilibrium and compatibility; emphasise the unity of structural analysis, particularly for indeterminate structures; and identify the roles of idealization and discretization in structural modelling. Thus, energy methods also serve as a prelude to the main ideas behind modern computational approaches to structural analysis and design. As an aid to upper-level undergraduate students in mastering this material, the text includes numerous worked examples, as well as homework problems.

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