

Plate and Panel Structures of Isotropic, Composite and Piezoelectric Materials, Including Sandwich Construction (Solid Mechanics and Its Applications)

By Jack R. Vinson



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Plates and panels are primary components in many structures including space vehicles, aircraft, automobiles, buildings, bridge decks, ships and submarines. The ability to design, analyse, optimise and select the proper materials for these structures is a necessity for structural designers, analysts and researchers.

This text consists of four parts. The first deals with plates of isotropic (metallic and polymeric) materials. The second involves composite material plates, including anisotropy and laminate considerations. The third section treats sandwich constructions of various types, and the final section gives an introduction to plates involving piezoelectric materials, in which the "smart" or "intelligent" materials are used as actuators or sensors.

In each section, the formulations encompass plate structures subjected to static loads, dynamic loads, buckling, thermal/moisture environments, and minimum weight structural optimisation.

This is a textbook for a graduate course, an undergraduate senior course and a reference. Many homework problems are given in various chapters.





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Review

From the reviews of the first edition:

"This textbook is aimed at both graduate and post-graduate students who have taken a course on the mechanics of materials. ... the book by Vinson is a reader friendly well-organised textbook in the field of mechanics of plates and panels. Each section includes a list of problems. It can be recommended to students of technological universities and institutes." (Igor Andrianov, Zentralblatt MATH, Vol. 1079, 2006)

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