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5.3 Reductions of Governing Equations: Applications to Specific Problems5.3.1 Composite Plate under Localized In-Plane Load; 5.3.2 Composite Plate under Out-of-Plane Point Load; 5.4 Energy Methods; 5.4.1 Energy Expressions for Composite Plates; 5.4.1.1 Internal Strain Energy U; 5.4.1.2 External Work W; Exercises; References; 6 Buckling of Composite Plates; 6.1 Buckling of Rectangular Composite Plate under Biaxial Loading; 6.2 Buckling of Rectangular Composite Plate under Uniaxial Compression; 6.2.1 Uniaxial Compression, Three Sides Simply Supported, One Side Free
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7.2.1.1 Application: Post-Buckled Stiffened Fuselage Skin under Shear

Sommario/riassunto

"New edition updated with additional exercises and two new chapters. Design and Analysis of Composite Structures: With Applications to Aerospace Structures, 2nd Edition builds on the first edition and includes two new chapters on composite fittings and the design of a composite panel, as well additional exercises. The book enables graduate students and engineers to generate meaningful and robust designs of complex composite structures. A compilation of analysis and design methods for structural components made of advanced composites, it begins with simple parts such as skins and stiffeners and progresses through to applications such as entire components of fuselages and wings. It provides a link between theory and day-to-day design practice, using theory to derive solutions that are applicable to specific structures and structural details used in industry.Starting with the basic mathematical derivation followed by simplifications used in real-world design, Design and Analysis of Composite Structures: With Applications to Aerospace Structures, 2nd Edition presents the level of accuracy and range of applicability of each method along with design guidelines derived from experience combined with analysis. The author solves in detail examples taken from actual applications to show how the concepts can be applied, solving the same design problem with different methods based on different drivers (e.g. cost or weight) to show how the final configuration changes as the requirements and approach change. Each chapter is followed by exercises that represent specific design problems often encountered in the aerospace industry but which are also applicable in the in the automotive, marine, and construction industries. Updated to include additional exercises, that represent real design problems encountered in the aerospace industry, but which are also applicable in the in the automotive, marine, and construction industries. Includes two new chapters. One on composite fittings and another on application and the design of a composite panel. Provides a toolkit of analysis and design methods that enable

engineers and graduate students to generate meaningful and robust designs of complex composite structures. Provides solutions that can be used in optimization schemes without having to run finite element models at each iteration; thus speeding up the design process and allowing the examination of many more alternatives than traditional approaches. Supported by a complete set of lecture slides and solutions to the exercises hosted on a companion website for instructors. An invaluable resource for Engineers and graduate students in aerospace engineering as well as Graduate students and engineers in mechanical, civil and marine engineering"--