



# Mechanics of Aircraft Structures

By Sun, C. T.

Wiley, 2006. Book Condition: New. Brand New, Unread Copy in Perfect Condition. A+ Customer Service! Summary: Preface. Preface to the First Edition. 1 Characteristics of Aircraft Structures and Materials. 1.1 Introduction. 1.2 Basic Structural Elements in Aircraft Structure. 1.2.1 Axial Member. 1.2.2 Shear Panel. 1.2.3 Bending Member (Beam). 1.2.4 Torsion Member. 1.3 Wing and Fuselage. 1.3.1 Load Transfer. 1.3.2 Wing Structure. 1.3.3 Fuselage. 1.4 Aircraft Materials. Problems. 2 Introduction to Elasticity. 2.1 Concept of Displacement. 2.2 Strain. 2.3 Stress. 2.4 Equations of Equilibrium in a Nonuniform Stress Field. 2.5 Principal Stress. 2.6 Shear Stress. 2.7 Revisit of Transformation of Stress. 2.8 Linear Stress-Strain Relations. 2.8.1 Strains Induced by Normal Stress. 2.8.2 Strains Induced by Shear Stress. 2.8.3 Three-Dimensional Stress-Strain Relations. 2.9 Elastic Strain Energy. 2.10 Plane Elasticity. 2.10.1 Stress-Strain Relations for Plane Isotropic Solids. 2.10.2 Stress-Strain Relations for Orthotropic Solids in Plane Stress. 2.10.3 Governing Equations. 2.10.4 Solution by Airy Stress Function for Plane Isotropic Solids. Problems. 3 Torsion. 3.1 Saint-Venant's Principle. 3.2 Torsion of Uniform Bars. 3.3 Bars with Circular Cross-Sections. 3.4 Bars with Narrow Rectangular Cross-Sections. 3.5 Closed Single-Cell Thin-Walled Sections. 3.6 Multicell Thin-Walled Sections. 3.7 Warping in Open Thin-Walled Sections. 3.8 Warping in Closed Thin-Walled Sections. 3.9 Effect of End Constraints. Problems. 4 Bending and Flexural Shear. 4.1 Derivation of the Simple (Bernoulli-Euler) Beam Equation. 4.2 Bidirectional Bending. 4.3 Transverse Shear Stress due to Transverse Force in Symmetric Sections. 4.3.1 Narrow

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