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| Nota di contenuto | Front Cover; Aircraft Structures for engineering students; Copyright Page; Contents; Preface; Preface to Second Edition; Preface to Third Edition; Preface to Fourth Edition; Part A: Fundamentals of Structural Analysis; Section A1 Elasticity; Chapter 1 Basic elasticity; 1.1 Stress; 1.2 Notation for forces and stresses; 1.3 Equations of equilibrium; 1.4 Plane stress; 1.5 Boundary conditions; 1.6 Determination of stresses on inclined planes; 1.7 Principal stresses; 1.8 Mohr's circle of stress; 1.9 Strain; 1.10 Compatibility equations; 1.11 Plane strain 1.12 Determination of strains on inclined planes 1.13 Principal strains; 1.14 Mohr's circle of strain; 1.15 Stress-strain relationships; 1.16 Experimental measurement of surface strains; References; Problems; Chapter 2 Two-dimensional problems in elasticity; 2.1 Two-dimensional problems; 2.2 Stress functions; 2.3 Inverse and semi-inverse methods; 2.4 St. Venant's principle; 2.5 Displacements; 2.6 Bending of an end-loaded cantilever; Reference; Problems; Chapter 3 Torsion of solid sections; 3.1 Prandtl stress function solution; 3.2 St. Venant warping function solution; 3.3 The membrane analogy 3.4 Torsion of a narrow rectangular strip References; Problems; Section A2 Virtual Work, Energy and Matrix Methods; Chapter 4 Virtual work and energy methods; 4.1 Work; 4.2 Principle of virtual work; 4.3 Applications of the principle of virtual work; References; Problems; Chapter 5 Energy methods; 5.1 Strain energy and complementary |

energy; 5.2 The principle of the stationary value of the total complementary energy; 5.3 Application to deflection problems; 5.4 Application to the solution of statically indeterminate systems; 5.5 Unit load method; 5.6 Flexibility method
5.7 Total potential energy 5.8 The principle of the stationary value of the total potential energy; 5.9 Principle of superposition; 5.10 The reciprocal theorem; 5.11 Temperature effects; References; Further reading; Problems; Chapter 6 Matrix methods; 6.1 Notation; 6.2 Stiffness matrix for an elastic spring; 6.3 Stiffness matrix for two elastic springs in line; 6.4 Matrix analysis of pin-jointed frameworks; 6.5 Application to statically indeterminate frameworks; 6.6 Matrix analysis of space frames; 6.7 Stiffness matrix for a uniform beam; 6.8 Finite element method for continuum structures
References Further reading; Problems; Section A3 Thin Plate Theory; Chapter 7 Bending of thin plates; 7.1 Pure bending of thin plates; 7.2 Plates subjected to bending and twisting; 7.3 Plates subjected to a distributed transverse load; 7.4 Combined bending and in-plane loading of a thin rectangular plate; 7.5 Bending of thin plates having a small initial curvature; 7.6 Energy method for the bending of thin plates; References; Problems; Section A4 Structural Instability; Chapter 8 Columns; 8.1 Euler buckling of columns; 8.2 Inelastic buckling; 8.3 Effect of initial imperfections
8.4 Stability of beams under transverse and axial loads

Sommario/riassunto

Aircraft Structures for Engineering Students is the leading self contained aircraft structures course text. It covers all fundamental subjects, including elasticity, structural analysis, airworthiness and aeroelasticity. Now in its fourth edition, the author has revised and updated the text throughout and added new case study and worked example material to make the text even more accessible. Includes a Solutions Manual available to all adopting teachers.*The leading Aircraft Structures text, covering a complete course from basic structural mechanics to finite element analysis<br
