



Fundamentals of the Mechanics of Solids 2015 (Hardback)

By Paolo Maria Mariano, Luciano Galano

Springer-Verlag New York Inc., United States, 2015. Hardback. Condition: New. 2015 ed. Language: English. Brand new Book. This distinctive textbook aims to introduce readers to the basic structures of the mechanics of deformable bodies, with a special emphasis on the description of the elastic behavior of simple materials and structures composed by elastic beams. The authors take a deductive rather than inductive approach and start from a few first, foundational principles. A wide selection of exercises, many with hints and solutions, are provided throughout and organized in a way that will allow readers to form a link between abstract mathematical concepts and real-world applications. The text begins with the definition of bodies and deformations, keeping the kinematics of rigid bodies as a special case; the authors also distinguish between material and spatial metrics, defining each one in the pertinent space. Subsequent chapters cover observers and classes of possible changes; forces, torques, and related balances, which are derived from the invariance under classical changes in observers of the power of the external actions over a body, rather than postulated a priori; constitutive structures; variational principles in linear elasticity; the de Saint-Venant problem; yield criteria and a discussion of their role in the...



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