

## About the Book

The study of the response of solid objects when they are subjected to stresses and strains is known as the "strength of materials," which is sometimes referred to as the "mechanics of materials." Material strength is defined as the point on the engineering stress-strain curve known as the yield stress, which is the point beyond which the material undergoes deformations that will not be entirely reversed upon removal of the loading. As a consequence, the member will have a deflection that is permanent. The point on the engineering stress-strain curve that corresponds to the stress that causes a material to fracture is known as the ultimate strength of the material. Strength of materials, often known as the mechanics of materials, is a discipline that primarily relates to the many techniques of estimating the stresses and strains in structural components like beams, columns, and shafts. The techniques that are used to anticipate the reaction of a structure under loading and its susceptibility to different failure modes take into consideration the characteristics of the materials, such as the yield strength, ultimate strength, Young's modulus, and Poisson's ratio of the material. This ensures that an accurate prediction can be made. In addition, one must take into account the macroscopic qualities (geometric properties) of the mechanical element. These include the element's length, breadth, thickness, boundary limitations, and sudden changes in geometry, such as holes.

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# **Elements of Strength of Materials**

By

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He is very much enthusiastic towards research activities. He has published 3 Free SCI, 6 Free Web of Science and 6 Free Scopus journal papers, 1 book chapter, 2 patents and around 30 other reputed publication papers. Reviewed ten articles in reputable International journals. Under his able guidance 32 projects have been completed in UG level, and 8 projects in PG level. One CRG project has been provisionally accepted in May-2023.

**Er. R. Surendra Babu** was Ph.D Registered with Acharya Nagarjuna University, Post-graduation in the specialization of Structural Engineering from Bharathiyar University Tamilnadu and Bachelor of Engineering in Civil Engineering from Andhra university. He has 23 years of teaching experience in various reputed engineering colleges in Tamilnadu and Andhra Pradesh and 9 years of construction and project management experience in India.