1. Record Nr. UNINA9911049108303321

Autore	Ochsner Andreas
Titolo	An Introduction to the Classical Approximation Methods in Applied Mechanics / / by Andreas Öchsner
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2026
ISBN	3-032-06967-X
Edizione	[1st ed. 2026.]
Descrizione fisica	1 online resource (116 pages)
Collana	SpringerBriefs in Computational Mechanics, , 2191-5350
Disciplina	620.1
Soggetti	Mechanics, Applied Engineering Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Finite Difference Method -- Finite Element Method -- Finite Volume Method -- Boundary Element Method -- Comparison of the Methods.
Sommario/riassunto	This book presents a unified approach to classical approximation methods in engineering by applying the weighted residual method to transform differential equations into solvable algebraic systems. It demonstrates how this procedure underlies the finite difference, finite element, finite volume, and boundary element methods. The mechanical focus is on the one-dimensional tensile bar, allowing the mathematical framework and resulting matrix equations to be fully displayed and understood without symbolic abstraction. This approach supports a clear understanding of the derivation processes and is designed to help readers implement and extend features such as constitutive models in commercial simulation tools.