1. Record Nr. UNINA9910403762303321

Autore	Strømmen Einar N
Titolo	Structural Mechanics : The Theory of Structural Mechanics for Civil, Structural and Mechanical Engineers / / by Einar N. Strømmen
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-44318-3
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (368 pages)
Disciplina	624.171
Soggetti	Mechanics Mechanics, Applied Thermodynamics Heat engineering Heat - Transmission Mass transfer Engineering mathematics Solid Mechanics Engineering Thermodynamics, Heat and Mass Transfer Engineering Mathematics Classical Mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction to the Theory of Forces -- Statically Determinate Systems -- The Theory of Stress and Strain -- Design Criteria -- Deformations of Beams, Trusses and Frames -- Statically Indeterminate Systems -- Stresses in Composite Beams -- Non-symmetric Beam Cross Sections -- Some Special Structural Systems -- The Theory of Torsion -- Bending of Plates -- Elastic Buckling. .
Sommario/riassunto	This text book covers the principles and methods of load effect calculations that are necessary for engineers and designers to evaluate the strength and stability of structural systems. It contains the mathematical development from basic assumptions to final equations ready for practical use. It starts at a basic level and step by step it

brings the reader up to a level where the necessary design safety considerations to static load effects can be performed, i.e. to a level where cross sectional forces and corresponding stresses can be calculated and compared to the strength of the system. It contains a comprehensive coverage of elastic buckling, providing the basis for the evaluation of structural stability. It includes general methods enabling designers to calculate structural displacements, such that the system may fulfil its intended functions. It is taken for granted that the reader possess good knowledge of calculus, differential equations and basic matrix operations. The finite element method for line-like systems has been covered, but not the finite element method for shells and plates. .