



Mechanics of Materials For Dummies

By James H. Allen III

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Mechanics of Materials For Dummies By James H. Allen III

Your ticket to excelling in mechanics of materials

With roots in physics and mathematics, engineering mechanics is the basis of all the mechanical sciences: civil engineering, materials science and engineering, mechanical engineering, and aeronautical and aerospace engineering.

Tracking a typical undergraduate course, *Mechanics of Materials For Dummies* gives you a thorough introduction to this foundational subject. You'll get clear, plain-English explanations of all the topics covered, including principles of equilibrium, geometric compatibility, and material behavior; stress and its relation to force and movement; strain and its relation to displacement; elasticity and plasticity; fatigue and fracture; failure modes; application to simple engineering structures, and more.

- Tracks to a course that is a prerequisite for most engineering majors
- Covers key mechanics concepts, summaries of useful equations, and helpful tips

From geometric principles to solving complex equations, *Mechanics of Materials For Dummies* is an invaluable resource for engineering students!

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Editorial Review

From the Back Cover

Your ticket to excelling in mechanics of materials

Mechanics of Materials For Dummies gives you plain-English explanations of all the topics you'll encounter in a typical undergraduate course, including principles of equilibrium, geometric compatibility, and material behavior; stress and its relation to force and movement; strain and its relation to displacement; and methods for calculating deformations and indeterminate systems.

- Brush up on basics — get a quick refresher on math and units, a brief review of essential statics topics, and an easy-to-follow introduction to mechanics of materials
- Sharpen your skills — find out which skills you need to master, including section property calculations, internal force diagrams, and how to locate the centroid of an area
- Stop stressing — get the 411 on the basic types of stress, grasp the difference between average stress and stress at a point, and learn to transform stresses to find principal values and angles
- Strain for more — discover how objects deform in response to strain, how you compute maximum and minimum strain values, and how to determine strain orientation within an object
- Compute displacements — explore different ways to compute deformations of objects under loads for both statically determinate and indeterminate systems

Open the book and find:

- How to use mechanics to understand material behavior
- Methods for calculating stresses and strains
- Basic torsion theory
- How to calculate deformations, displacements, and angles of twist
- How to solve indeterminate systems and composite materials problems
- Mohr's circle for transformations
- Hooke's law for stress and strain

Learn to:

- Understand key mechanics concepts
- Grasp principles of stress, strain, and deformation and their interactions
- Solve indeterminate statics problems

About the Author

James H. Allen III, PE, PhD is an assistant professor of civil engineering and a registered professional engineer. His specialty areas include structural engineering, numerical analysis and error control, and steel design. He is also the author of *Statics For Dummies*.

Users Review

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Terry Crabtree:

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