

# Design of Plate and Shell Structures

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## Chapter 1 — Introduction to Plate and Shell Structures

- Fundamental concepts
- Applications in engineering
- Types of plate and shell structures

## Chapter 2 — Theory of Plates

- Thin plate theory
- Plate bending equations
- Boundary conditions

## Chapter 3 — Stress and Strain Analysis

- Stress distribution
- Strain relationships
- Elastic behavior

## Chapter 4 — Bending of Plates

- Rectangular plates
- Circular plates
- Loading conditions

## Chapter 5 — Shell Theory

- Cylindrical shells
- Spherical shells
- Shell behavior

## Chapter 6 — Buckling of Shell Structures

- Stability analysis
- Critical loads
- Buckling behavior

## **Chapter 7 — Pressure Vessels**

- Design principles
- Stress calculations
- Industrial applications

## **Chapter 8 — Finite Element Applications**

- Finite element modeling
- Numerical analysis
- Engineering simulations

## **Chapter 9 — Structural Design Considerations**

- Safety factors
- Material selection
- Design standards

## **Chapter 10 — Practical Engineering Applications**

- Industrial structures
- Mechanical systems
- Civil engineering structures

## **Appendices**

- Engineering tables
- Design formulas
- Reference standards

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