

FATIGUE, CREEP AND FRACTURE

Fatigue: Types of fatigue loading and failure, Fatigue test, endurance limit; Fatigue under combine stresses; Influence of stress concentration on fatigue strength, Notch sensitivity, Factors influencing fatigue behavior.

Creep: Creep-stress-time temperature relations, Mechanics of creep in tension, bending, torsion, creep buckling. Members subjected to creep and combined stresses.

Fracture: Basic modes of fracture, Griffith of brittle fracture, Irwin's theory of fracture in elastic-plastic materials. Theories of linear elastic fracture mechanics, stress intensity factors, fracture toughness testing.

Text Books

1. Strength and Resistance of Metals - J. M. Lessels, John Wiley and Sons, Inc., 1954.
2. Mechanical Behaviour of Engineering Materials - Joseph Marin, PHI, 1966.
3. Fatigue Testing and Analysis - Y. Lee, J.Pam, R.B. Hathaway & M.E. Barkey Elsevier Press, 2005.
4. Engineering Fracture Mechanics - S. A. Meguid, Elsevier Press, 1989.

Reference Books

1. Mechanical Metallurgy - G. E. Dieter, Mc-Graw Hill Book Co., 1961.
2. Mechanical Behaviour of Materials - N. E. Dowling, PHI, 1997.
3. Introduction to Fracture Mechanics - Kare Hellan, Mc-Graw Hill Book Co., 1985.
4. The Practical Use of Fracture Mechanics - David Broek, MN Publishers, 1982.