

# Table of Contents

|   |     |
|---|-----|
| Terminology   | i   |
| Chapter 1: Introduction to Strength of Materials      | 1   |
| Chapter 2: Stress and Strain                          | 6   |
| Chapter 3: Poisson's ratio and Thermal Expansion      | 13  |
| Chapter 4: Pressure vessels and Stress concentrations | 21  |
| Chapter 5: Bolted and Welded Joint                    | 29  |
| Chapter 6: Properties of Areas                        | 42  |
| Chapter 7: Torsion in Round Shafts                    | 61  |
| Chapter 8: Beams Reactions, Shear and Moment Diagrams | 68  |
| Chapter 9: Stresses in Beams                          | 92  |
| Chapter 10: Beam Deflection                           | 107 |
| Chapter 11: Beam Design                               | 116 |
| Chapter 12: Combine Stresses                          | 129 |
| Chapter 13: Statically Indeterminate Beams            | 137 |
| Chapter 14: Buckling of Columns                       | 144 |
| Chapter 15: Visualizing Stress and Strain             | 152 |
| Bibliography  | 172 |
| Appendixes  | 174 |