

1 Vectors and Static Equilibrium	1
1.1 Scalars and Vectors	2
1.2 Vectors in Two Dimensions	11
1.3 Statics — Forces in Equilibrium	23
2 Kinematics	41
2.1 Uniform Acceleration	42
2.2 Projectile Motion	55
3 Momentum and Energy	69
3.1 Dynamics	70
3.2 Momentum and Impulse	79
3.3 Momentum in Two-Dimensional Situations	84
3.4 Energy	93
3.5 The Law of Conservation of Mechanical Energy	106
4 Circular Motion and Gravitation	119
4.1 Motion in a Circle	120
4.2 Gravity and Kepler’s Solar System	132
4.3 Newton’s Law of Universal Gravitation	140
5 Electrostatics	157
5.1 Static Electric Charges	158
5.2 The Electric Force	167
5.3 Electric Field Strength	177
5.4 Electric Potential Energy, Electric Potential, and Electric Potential Difference	187
5.5 Electric Field and Voltage — Uniform Field	200
6 Electric Circuits	219
6.1 Current Events in History	220
6.2 Ohm’s Law	230
6.3 Kirchhoff’s Laws	241
7 Magnetic Forces	261
7.1 Basic Ideas about Magnets	262
7.2 Magnetic Field Strength, B	274
7.3 Magnetic Fields and the Electron	284
8 Electromagnetic Induction	299
8.1 Induced Emf	300
8.2 Magnetic Flux and Faraday’s Law of Induction	311
Answers Key	329
Glossary	339
Index	343