Six Ideas That Shaped Physics, 3/e
Contents

Unit C
C1. The Art of Model Building
C2. Particles and Interactions
C3. Vectors
C4. Systems and Frames
C5. Conservation of Momentum
C6. Conservation of Angular Momentum
C7. More about Angular Momentum (*optional*)
C8. Conservation of Energy
C9. Potential Energy Graphs
C10. Work
C11. Rotational Energy
C12. Thermal Energy
C13. Other Forms of Internal Energy
C14. Collisions (*optional*)
CA. (Appendix) The Standard Model

Unit N
N1. Newton's Laws
N2. Forces from Motion
N3. Motion from Forces
N4. Statics
N5. Linearly Constrained Motion
N6. Coupled Objects
N7. Circularly Constrained Motion
N8. Noninertial Frames
N9. Projectile Motion
N10. Oscillatory Motion
N11. Kepler's Laws
N12. Orbits and Conservation Laws (*optional*)
NA. (Appendix) Differential Calculus
NB. (Appendix) Integral Calculus

Unit R
R1. The Principle of Relativity
R2. Coordinate Time
R3. The Spacetime Interval
R4. Proper Time
R5. Coordinate Transformations
R6. Lorentz Contraction
R7. The Cosmic Speed Limit
R8. Four-Momentum
R9. Conservation of Four-Momentum
RA. (Appendix) Converting Equations to SI Units
RB. (Appendix) The Relativistic Doppler Effect

(Underlined chapters represent possible early unit ending points that won't affect other units.)

Unit E
E1. Electric Fields
E2. Charge Distributions
E3. Electric Potential
E4. Static Equilibrium
E5. Current (and flux)
E6. Dynamic Equilibrium
E7. Analyzing Circuits (*optional*)
E8. Magnetic Fields
E9. Currents Respond to Magnetic Fields
E10. Currents Create Magnetic Fields
E11. The Electromagnetic Field
E12. Gauss's Law
E13. Ampere's Law
E14. Integral Forms (*optional*)
E15. Maxwell's Equations
E16. Faraday's Law (*optional*)
E17. Induction (*optional*)
E18. Electromagnetic Waves
EA. (Appendix) The Electromagnetic Transformation Law
EB. (Appendix) Radiation from an Accelerating Particle

Unit Q
Q1. Wave Models
Q2. Standing Waves and Resonance
Q3. Interference and Diffraction
Q4. The Particle Nature of Light
Q5. The Wave Nature of Particles
Q6. Spin
Q7. The Rules of Quantum Mechanics
Q8. Quantum Weirdness (*optional*)
Q9. The Wavefunction
Q10. Simple Quantum Models
Q11. Spectra (includes semiconductors)
Q12. The Schrodinger Equation (*optional*)
Q13. Introduction to Nuclei
Q14. Nuclear Stability
Q15. Nuclear Technology (*optional*)
QA. (Appendix) Complex Numbers

Unit T
T1. Temperature
T2. Macrostates and Microstates
T3. Entropy and Temperature
T4. The Boltzmann Factor
T5. The Ideal Gas
T6. Distributions (*optional*)
T7. Gas Processes
T8. Calculating Entropy Changes
T9. Heat Engines
T10. The Physics of Climate Change*

*Can be taught any time after unit C.