Historical Introduction to the Elementary Particles

Elementary Particle Dynamics
1. The Four Forces
2. Quantum Electrodynamics
3. Quantum Chromodynamics
4. Weak Interactions
5. Unification Scheme

Relativistic Kinetics
1. Lorentz Transformations
2. Four vectors
3. Energy Momenta
4. Collisions
5. Classical Collisions
6. Relativistic Collisions

Symmetries
1. Symmetries, Groups, and Conservation Laws
2. Angular Momentum
3. Flavor Symmetries
4. Discrete Symmetries

The Feynman Calculus
1. Decays and Scattering
2. Decay Rates
3. Cross sections
4. The Golden Rule
5. Golden Rule for Decays

Quantum Electrodynamics
1. The Dirac Equation
2. Solutions to the Dirac Equation
3. Bilinear Covariants
4. The Photon
5. The Feynman Rules for QED
6. Cross Sections and Lifetimes

Gauge Theories
1. Lagrangian formulation of Classical Particle Mechanics
2. Lagrangian in Relativistic Field Theory
3. Local Gauge invariance
4. Yang-Mills Theory
5. Spontaneous Symmetry breaking
6. The Higgs Mechanism

**Neutrino Oscillation**
1. The Solar Neutrino Problem
2. Oscillations
3. Confirmation
4. Neutrino Masses
5. The Mixing Matrix