1. Introduction.
   - What is quantum field theory?
     Canonical quantization.
     Why quantum field theory? Lorentz invariance, causality.

2. Path Integral.
   - Path Integral in Quantum Mechanics.
     Path Integral in quantum Field theory.
     Symmetries, continuous and discrete.

   - LSZ.
     Cross section. Decay width.
     Unitarity. Optical theorem.
     Examples in $\lambda \phi^4$.

4. Renormalization of Effective Field theory.
   - Loops, renormalization, and BPHZ.
     Wilsonian effective field theory.
     Renormalization group equations. $\beta$-function.