PHYS 617

Quantum Field Theory

Textbook: Quantum Field Theory by David Tong https://www.damtp.cam.ac.uk/user/tong/qft.html

Mode of Teaching: Online (till April)

Exams: Midterm 1 (take-home): %25 Midterm 2 (take-home): %25 Final Examination (take-home): %50

Content:

- 1. First Quantization: Forming "classical field theory"
 - a) Schroedinger field theory
 - b) Scalar field theory
 - c) Spinor field theory
 - d) Electromagnetic theory
- 2. Canonical Quantization: Generalized Simple Harmonic Oscillator
 - e) Simple harmonic oscillator: Dirac quantization
 - f) Scalar field theory (Canonical quantization)
 - g) Spinor field theory (Canonical quantization)
 - h) Electromagnetic theory (Canonical quantization)
- 3. Interacting Quantum Fields
 - a) Simple interactions and Feynman diagrams
 - b) A case study: Quantum Electrodynamics