

Quantum Field Theory I – 118132 (Shlomo S. Razamat).

- **Contact information:** – Room 403 (LITP), email: razamat@physics.technion.ac.il.
- **Office hours:** – Please drop by between 9:00 – 15:00 or schedule a meeting online through email.
- **Grading:** – 40% Home exercises (one exercise every two weeks, six sets per course), 60% final exam.
- **Syllabus:** – (1) Introduction to QFT (2) Quantum mechanics as a QFT in $0 + 1$ dimensions (2) Scalar QFT in $D+1$ dimensions (3) Spinor QFT in $3 + 1$ dimensions (4) Abelian gauge theory and quantum electrodynamics in $3 + 1$ dimensions.
- **Assumptions:** – Quantum mechanics II (and III), Relativity, reasonable familiarity with electromagnetism (*e.g.* Electrodynamics class)
- **Goals:** – The main goal of the course is to introduce the general techniques of (perturbative) Quantum Field Theory. We will discuss in full detail how to perform computations in QFT with various types of fields and interactions. For this the ideas of renormalization will be crucial. Finally, we will apply the general idea and discuss in detail Quantum Electrodynamics.

- **Material:**

Primary sources:

- Xi Yin’s [lectures on QFT](#)
- M. Srednicki, [Quantum Field Theory](#)
- S. Weinberg, [Quantum Field Theory: Foundations](#)

More sources:

- McGreevy, [Where do quantum field theories come from?](#)
- Collins, [Renormalization](#)
- David Tong’s lectures on [Quantum Field Theory](#)