Time and place: TuTh 9:30-11:00 pm, 20 Barrows.
Discussion section: tbd, tbd.
Office hour: Fridays 10:30-11:30, OLC 301H.
GSI: [redacted].
Grading: 0.25 homework + 0.25 midterm + 0.5 finals

Homework will be posted on bcourses.

Homework posted on Tu is due to on Tu the following week be before midnight. There will be no homework
for exam weeks. We encourage you to collaborate on homework, however, we require that you write your own solution and that you have contributed intellectually to it. Please note that presenting somebody elses work including homework as your own is a serious scientific misconduct and will lead to failure of the course (if we find out ...).

Some of the homework will be new problems, i.e. they haven't been tried on students. Expect incomplete problems, some might be trivial others impossible to solve, but they all serve the purpose of getting you to think carefully about the material.

Course description:
Quantum Information & Computation (3) Three hours of lecture and one hour of discussion per week.
Prerequisites: 137A, or consent of instructor.

Introduction to the theory and practice of quantum computation. Topics will include quantum bits, entanglement, quantum gates, quantum algorithms, quantum error correction, quantum communication and quantum simulation. The course will emphasize experimental implementations of these concepts.

Books:

- Quantum Computation and Quantum Information, M. Nielsen, I. Chuang, Cambridge.
  This is the go-to reference, especially for theory. Is outdated on the experimental side.

- A short introduction to Quantum Information and Quantum Computation, M. Le Bellac, Cambridge.
  A nice gentle introduction to quantum information from the Physics side.

- Quantum Computing, A Gentle introduction, E Rieffel, W. Polak, The MIT Press.
  Another nice introduction, more from the computer science side.

- Quantum Computing without Magic, Meglicki, The MIT Press.
  Best book I could find discussing some of the experimental aspects. We will work a lot with original literature.

- Quantum Measurement Theory and its Applications, K. Jacobs, Cambridge.
  B*ook covers the basics of superconducting qubits.*