Quantum Information Processing

Lecture 0

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Slides Prepared by Mahdi Dolati

Teaching Staff

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Course Goals

- Learn postulates of quantum mechanics
- Review the elementary quantum gates
- Learn the concept of quantum circuits
- Study important quantum circuits:
  - Deutsch
  - Grover
  - Shor
- Familiarize with a quantum computer simulator
- Learn quantum-related complexity classes

Course Format

- Self-read lectures
- 4 homework assignments
- 3 programming projects
- 5 Paper reviews
- A final project
- No final or midterm exam – Few quizzes and exams

Grading

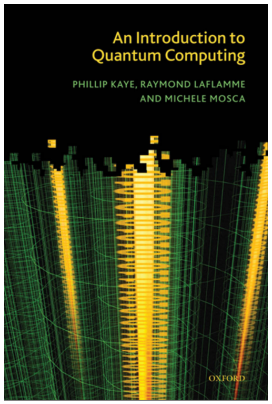
- 35% for the final project
- 15% for homework assignments
- 20% for programming projects
- 10% for paper reviews
- 20% for Quiz/exams

Write up the solutions on your own. We do not tolerate copying from other students or the Internet.

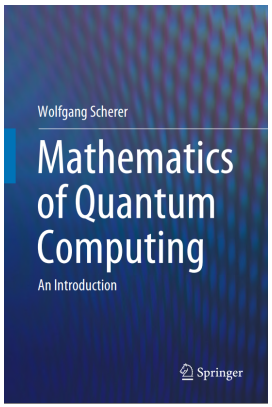
You have a budget of 10 days to submit with late. You can spend the budget as you desire. However, we do not accept late submissions after you consumed the whole budget. You may get extra credit for not spending the budget entirely.

You can only object to your grades within 2 days of receiving them. We do not consider objections after that.

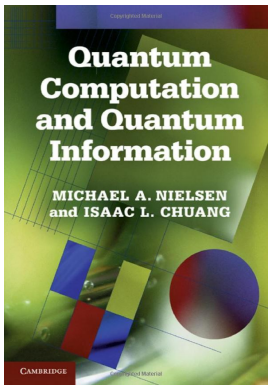
Course Materials



An Introduction to Quantum Computing, by Phillip Kaye, Raymond Laflamme, and Michele Mosca.



Mathematics of Quantum: Computing An Introduction, by Wolfgang Scherer.



Quantum Computation and Quantum Information, by Michael A. Nielsen and Isaac L. Chuang.