Quantum Information Processing

Lecture 0

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Uiversity of Tehran

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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
- Homework assignments
- Programming projects
- Paper reviews
- Few quizzes and exams

Grading

- $\sim 20\%$ for Homeworks
- $\sim 20\%$ for Programming projects
- $\sim 40\%$ for Paper reviews
- $\sim 20\%$ for Quiz/Exams

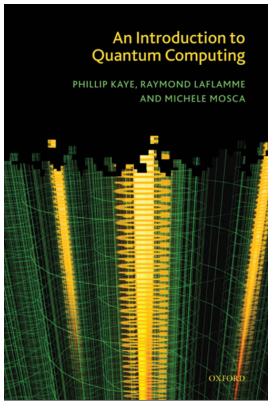
All assignments have a hard deadline. For every day of late submission, a penalty of 5% will be applied to the total points of assignment, up to a maximum penalty of 50%. Late submissions are not accepted after the maximum penalty has been applied.

Students who submit all assignments without any late submissions throughout the course may be eligible for bonus points, subject to instructor discretion.

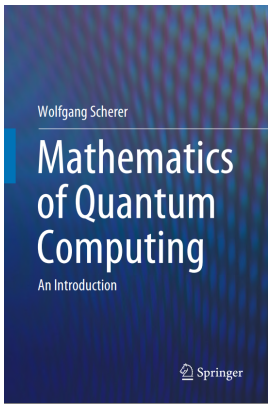
Write up the solutions on your own. we do not tolerate copying from other students or the Internet.

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

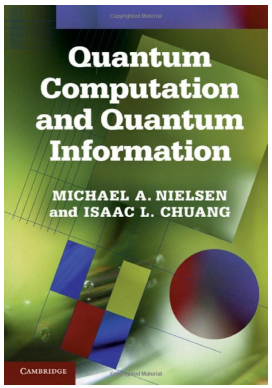
Course Materials



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.