CMPT 881 — Quantum Computing
Summer 2006

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Learning resources:

• Prerequisites: some knowledge in linear algebra and algorithms is very helpful
• Lectures: MWF 12:30–1:20, in AQ 5006
• Further reading:
  – David C. Lay, Linear Algebra and Its Applications, Pearson

• Instructor’s office hours: W 14:00–15:00 in TASC 8013, or by appointment

Course web page: www.cs.sfu.ca/abulatov/CMPT881QC
Please refer to this page regularly for important information related to the course.

Course Outline: This course deals with the field of quantum computation, which is computation based on quantum mechanical principles. The course is taught from a computer science perspective. It will explain the model of quantum computation, and will cover the main quantum algorithms and complexity results as well as some elements of quantum information theory.

Topics to be covered:

• Preliminaries: complex numbers, linear algebra
• Model of Quantum Computation
• Quantum Algorithms
• The Quantum Fourier Transform and its Applications to the Factoring, Discrete Logarithm and Other Problems
• Quantum Search Algorithms
- Quantum Information
- Quantum Error-Correction

**Marking scheme:**

attendance 30%.

project or presentation 70%.

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