

EECS 598 -1: (Special Topics in EECS)
QUANTUM COMPUTING CIRCUITS

Tentative Lecture Schedule: Thursdays 3:00 - 5:00pm, EECS 3427
(check for updates in two weeks)

1. (Sept. 6) Course organization.
Introduction to quantum computing (I. Markov)
2. (Sept. 13) Mathematical basics.
Matrix and tensor algebra (I. Markov)
3. (Sept. 20) Physics basics.
Quantum mechanics and computation (D. Steel)
4. (Sept. 27) Algorithm and data structure basics.
Introduction to quantum algorithms (I. Markov).
5. (Oct. 4) Logic circuit basics.
Quantum gates and circuits (J. Hayes).
6. (Oct. 11) Quantum algorithms (cont'd).
Shor's and Grover's algorithms (D. Motter).
7. (Oct. 18) Quantum circuits (cont'd).
Synthesis approaches of Cybenko et al. (V. Shende
and A. Prasad).
8. (Oct. 25) Quantum circuit implementation
Experimental quantum computing devices (C. Monroe)
9. (Nov. 1) Term project discussion and assignments (J. Hayes
and I. Markov).
10. (Nov. 8) Student presentation(s).
11. (Nov. 15) Student presentation(s).
12. (Nov. 29) Student presentation(s).
13. (Dec. 6) Student presentation(s). Course wrap-up discussion.