Reading materials and relevant references:

Books

- Quantum Computer Science by David Mermin (2007)
- Quantum Computing for Computer Scientists by Yanofsky, Noson S. and Mirco A. Mannucci (2008)
- Quantum Computation and Quantum Information by Nielsen and Chuang (2010)
- Classical and Quantum Computation by Kitaev, Shen, and Vyalyi (1999)
- Quantum Information Theory by Mark Wilde (2013)
- An Introduction to Quantum Computing by Phillip Kaye, Raymond Laflamme, and Michele Mosca (2007)
- Quantum Computing Explained by McMahon, David (2008).
- Quantum Computing --- Progress and Prospects by Emily Grumbling and Mark Horowitz, Editors, A Consensus Study Report of the National Academies of Sciences, Engineering, Medicin, 2018.

Other Lecture Notes

- Quantum Computation by David Mermin
- Quantum Computation by Umesh Vazirani
- Quantum Computation by John Preskill
- Theory of Quantum Information and Introduction to Quantum Computing by John Watrous
- Quantum algorithms by Andrew Childs
- Quantum Computing Since Democritus by Scott Aaronson
- Quantum Computing by David Bacon
- Quantum Computation and Information by Ryan O'Donnell, John Wright
- Quantum Computing by Peter Shor
- Qubits, Quantum Mechanics, and Computers by B. Whaley, K. Young, M. Sarovar
- Topics in Quantum Computing by Don Towsley and Bo Jiang with videos
- Quantum Computing by Ronald de Wolf with full-fledged lecture notes
- Great Ideas in Theoretical Computer Science by Scott Aaronson with lectures on Quantum Computing and Quantum Algorithms

Quantum Computing Devices/Simulators

- DWave and its software incl. qbsolv
    - Quantum Apprentice for Excel, see
    - qOp v2.5 for Linux, see qOp_linux_INSTALL_0.pdf. Actually, I prefer this setup:

```
tar xzf qOp.linux_2.5.0.1.tar
cd qOp/bin
cp dw_setup dw
chmod 755 dw
cd ..
export DWAVE_HOME=`pwd`/projects-cvs/dwave-x2/v2.5/qOp
export PATH=$PATH:$DWAVE_HOME/bin
export LD_LIBRARY_PATH=$DWAVE_HOME:$LD_LIBRARY_PATH
cp $DWAVE_HOME/.dwrc ~/
```

    - qOp v2.5 for OSX, see qOp_osx_INSTALL_1.pdf
    - qOp v2.5 for Windows, see qOp_win32_INSTALL_0.pdf
- IBM's QX and qiskit plus talk (slides/video)
    - Introduction to Quantum Computing
    - Quantum Algorithm Implementations for Beginners (with IBM examples)
- Quantum Neural Network (Japan)
- Microsoft's Q#
- ScaffCC Compiler
- QX Quantum Computer Simulator from QuTech / TU Delft (joint with Intel)
- List of Quantum Computing Tools
- qmasm and edif2qmasm (EDIF Verilog to DWave Qmasm) from Scott Pakin (LANL)
- Quirk web-based gate-model simulator w/ Grover algorithm
    - recommended for Quirk users: Quantum computing for the determined Utube video series by Michael Nielsen
- QuTiP Quantum Toolbox in Python (for Physics problems)

Papers/Talks

- From Cbits to Qbits: Teaching Computer Scientists Quantum Mechanics by David Mermin
- Design of a Superconducting Quantum Computer by John Martinis (UCSB+Google QUantum AI)
- Adiabatic Quantum Computation by Vicky Choi (VT)
- A Layered Software Architecture for Quantum Computing Design Tools by Svore at al., IEEE Computer (Volume: 39, Issue: 1, Jan. 2006)
- ScaffCC: A Framework for Compilation and Analysis of Quantum Computing Programs. Ali JavadiAbhari, Shruti Patil, Daniel Kudrow, Jeff Heckey, Alexey Lvov, Frederic T. Chong, Margaret Martonosi. ACM International Conference on Computing Frontiers, May 2014. Best Paper Award. ScaffCC on github. related slides
- Software and Architectures for Large-Scale Quantum Computing, Fred Chong, U. Chicago
- Compiler Management of Communication and Parallelism for Quantum Computation. Jeff Heckey, Shruti Patil, Ali JavadiAbhari, Adam Holmes, Daniel Kudrow, Ken Brown, Diana Franklin, Margaret Martonosi, Frederic T. Chong. Architectural Support for Programming Languages and Operating Systems (ASPLOS), March 2015.
- more papers by Fred Chong U Chicago
- A Software Methodology for Compiling Quantum Programs, Thomas HÃ¤ner, Damian S. Steiger, Krysta Svore, Matthias Troyer, arXiv:1604.01401, some slides
- D-Wave pubs suitable for presentation:
    - A practical heuristic for finding graph minors by Jun Cai, Bill Macready, Aidan Roy
    - Discrete optimization using quantum annealing on sparse Ising models, Bian et al., Front. Phys., 18 September 2014
- Other D-Wave pubs:
    - Experimental Demonstration of a Robust and Scalable Flux Qubit by Harris et al., arXiv:0909.4321v1
    - Architectural considerations in the design of a superconducting quantum annealing processor by Bunyk et al., arXiv:1401.5504

    - Entanglement in a Quantum Annealing Processor by Lanting et al., arXiv:1401.3500
    - Gates for Adiabatic Quantum Computing by Richard H. Warren, arXiv:1405.2354, 2014
    - Ground State Spin Logic by J. D. Whitfield, M. Faccin, J. D. Biamonte, arXiv:1205.1742, 2012

- Performance Models for Split-execution Computing Systems by Travis S. Humble, Alexander J. McCaskey, Jonathan Schrock, Hadayat Seddiqi, Keith A. Britt, Neena Imam, arXiv:1607.01084
- A quantum macro assembler by Scott Pakin, High Performance Extreme Computing Conference (HPEC), 2016, QMASM github code
- QX: A high-performance quantum computer simulation platform by Khammassi et al., DATE'17
- Quantum Error Correction for Beginners by Simon J. Devitt, Kae Nemoto, William J. Munro, arXiv:0905.2794
- Quantum Computing over Finite Fields: Reversible Relational Programming with Exclusive Disjunctions by Roshan P. James, Gerardo Ortiz, Amr Sabry, arXiv:1101.3764
- Quantum Supremacy through the Quantum Approximate Optimization Algorithm, Edward Farhi, Aram W Harrow, arXiv:1602.07674 (Submitted on 24 Feb 2016)
- Error mitigation for short-depth quantum circuits, Kristan Temme, Sergey Bravyi, Jay M. Gambetta (Submitted on 6 Dec 2016 (v1), arXiv:1612.02058, last revised 6 Nov 2017 (this version, v3))
- Physics: Hybrid Quantum-Classical Approach to Correlated Materials, Bela Bauer, Dave Wecker, Andrew J. Millis, Matthew B. Hastings, and Matthias Troyer, Phys. Rev. X 6, 031045, 21 September 2016
- Chemistry: A variational eigenvalue solver on a photonic quantum processor, A. Peruzzo et al., Nature Comms 5, 4213 (2014)
- Quantum supremacy: Quantum advantage with shallow circuits by Sergey Bravyi, David Gosset, Robert Koenig in arXiv:1704.00690, Apr 2017, also in Science, 19 Oct 2018: Vol. 362, Issue 6412, pp. 308-311, DOI: 10.1126/science.aar3106, slides, video