

**Northwestern University**  
**EECS 101:**  
**An Introduction to Computer Science for Everyone**  
**Spring, 2011**

**Reading List**

(last updated 3/25/2011)

You do not need to read or buy all of these. The syllabus and/or the class home page describes the required readings and what books to buy. For readings that are not in the required books, we will either provide pointers to web documents or hand out copies in class.

**Books:**

- David Harel, *Computers Ltd: What They Really Can't Do*, Oxford University Press, 2003.
- Fred Brooks, *The Mythical Man-month: Essays on Software Engineering*, 20th Anniversary Edition, Addison-Wesley, 1995.
- Joel Spolsky, *Joel on Software: And on Diverse and Occasionally Related Matters That Will Prove of Interest to Software Developers, Designers, and Managers, and to Those Who, Whether by Good Fortune or Ill Luck, Work with Them in Some Capacity*, APress, 2004. Most content is available for free from Spolsky's Blog (see <http://www.joelonsoftware.com>).
- Paul Graham, *Hackers and Painters*, O'Reilly, 2004. See also Graham's site <http://www.paulgraham.com/>.
- Martin Davis, *The Universal Computer: The Road from Leibniz to Turing*, W.W. Norton and Company, 2000.
- Ted Nelson, *Computer Lib/Dream Machines*, 1974. This book is now very rare and very expensive, which is sad given how visionary it was.
- Simon Singh, *The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography*, Anchor, 2000.
- Douglas Hofstadter, *Goedel, Escher, Bach: The Eternal Golden Braid*, 20th Anniversary Edition, Basic Books, 1999.

- Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*, 2nd Edition, Prentice Hall, 2003.
- Ray Kurzweil, *Are We Spiritual Machines? Ray Kurzweil vs. the Critics of Strong AI*, Discovery Institute, 2002. Also available for free on Kurzweil's site <http://www.kurzweilai.net/>.
- Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics*, Penguin, 1991.
- Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*, Penguin, 2000.
- Tracy Kidder, *The Soul of a New Machine*, Back Bay Books, 2000.
- Charles Petzold, *Code: The Hidden Language of Computer Hardware and Software*, Microsoft Press, 2000.
- Steven Wolfram, *A New Kind of Science*, Wolfram Media, 2002. Also available online for free at <http://www.wolframscience.com/>.
- Daniel Dennett, *Consciousness Explained*, Back Bay Books, 1991.
- Ian Foster and Carl Kesselman, eds, *Grid 2: The Blueprint for a New Computing Infrastructure*, Morgan Kaufmann, 2003.
- Lawrence Lessig, *Free Culture: The Nature and Future of Creativity*, Penguin, 2005. Also available for free via <http://www.lessig.org/blog/>.
- Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World*, Vintage, 2002. Also available for free from <http://www.lessig.org/blog/>.
- Lawrence Lessig, *Code and Other Laws of Cyberspace*, Basic Books, 2000. Get "Code 2.0" (2006 revision) instead. Also available for free from <http://www.lessig.org/blog/>.
- Richard Stallman, *Free Software, Free Society: Selected Essays of Richard M. Stallman*, Free Software Foundation, 2002. Also available for free from <http://www.gnu.org>.
- Eric Raymond, *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*, O'Reilly, 2001. Also mostly available for free from

<http://www.catb.org/~esr/writings/cathedral-bazaar/>.

- Steven Levy, *Hackers: Heroes of the Computer Revolution*, Penguin, 2001.
- Chris Anderson, *The Long Tail: Why the Future of Business is Selling Less of More*, Hyperion, 2006. Some content also available online at <http://www.thelongtail.com/>.
- John Battelle, *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture*, Portfolio Hardcover, 2005. Some content also available at <http://battellemedia.com/thesearch/>.
- Scott Rosenberg, *Dreaming in Code: Two Dozen Programmers, Three Years, 4732 Bugs, and One Quest for Transcendent Software*, Crown, 2007.
- Harold Abelson, Gerald Jay Sussman, and Julie Sussman, *Structure and Interpretation of Computer Programs*, MIT Press, 1996. Available for free at <http://mitpress.mit.edu/sicp/full-text/book/book.html>.
- Eric Raymond, *The New Hacker's Dictionary*, MIT Press, 1996. Available online for free as "The Jargon File" at <http://www.catb.org/~esr/jargon/>.
- Susan Lammers, *Programmers at Work: Interviews with 19 Programmers Who Shaped the Computer Industry*, Tempus, 1989.
- Peter Seibel, *Coders at Work*, APress, 2009.

### **Articles and Papers:**

- Vannevar Bush, *As We May Think*, *The Atlantic Monthly*, July, 1945.  
<http://www.theatlantic.com/doc/194507/bush>
- F. Corbato and V. Vyssostsky, *Introduction and Overview of the Multics System*, Fall Joint Computer Conference, 1965.
- Tadayoshi Kohno, Adam Stubblefield, Aviel Rubin, and Dan Wallach, *Analysis of an Electronic Voting Machine*, IEEE Symposium on Security and Privacy, 2004.
- Edsger Dijkstra, *Assorted Manuscripts/Talks*.

<http://www.cs.utexas.edu/users/EWD/>

- Jeannette Wing, "Computational Thinking", Communications of the ACM, Volume 49, Number 1, January 2006, pp. 33-35.
- Bernard Chazelle, "Could Your iPod be Holding the Greatest Mystery in Modern Science?", Math Horizons, April, 2006.

<http://www.cs.princeton.edu/~chazelle/pubs/ipod.pdf>

- Wikipedia, "The Antikythera Mechanism".

[http://en.wikipedia.org/wiki/Antikythera\\_mechanism](http://en.wikipedia.org/wiki/Antikythera_mechanism)

- Ray Kurzweil, <http://KurzweilAI.net>. (This site has a wide range of materials on AI and the Singularity.)
- John McCarthy, "What is Artificial Intelligence?"

<http://www.formal.stanford.edu/jmc/whatisai/>

- Fred Brooks, No Silver Bullet: Essence and Accidents of Software Engineering, IEEE Computer, Volume 20, Number 4, April 1987. (Widely available online.)
- Nick Bostrom, Are You Living in a Computer Simulation?, Philosophical Quarterly, Volume 53, Number 211, 2003. (Available online at <http://www.simulation-argument.com/>.)
- David Waitzman, A Standard for the Transmission of IP Datagrams on Avian Carriers, IETF RFC 1149, 1990.
- Duncan Watts, "Is Justing Timberlake a Product of Cumulative Advantage?", The New York Times, April 15, 2007.

<http://www.nytimes.com/2007/04/15/magazine/15wwlnidealab.t.html>

- Jon Kleinberg, "The Convergence of Social and Technological Networks", Communications of the ACM, November, 2008.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.147.1260&rep=rep1&type=pdf>

- Steven Levy, "Secret of Googlenomics: Data-Fueled Recipe Brews Profitability", Wired Magazine, May 22, 2009.  
[http://www.wired.com/culture/culturereviews/magazine/17-06/nep\\_googlenomics?currentPage=all](http://www.wired.com/culture/culturereviews/magazine/17-06/nep_googlenomics?currentPage=all)
- Chris Anderson, "The Long Tail", October 2004.  
<http://www.wired.com/wired/archive/12.10/tail.html>
- Eric Lofgren and Nina Fefferman, "The untapped potential of virtual game worlds to shed light on real world epidemics", The Lancet Infectious Diseases, September 2007.  
[http://breakglass.files.wordpress.com/2007/10/lofgren\\_fefferman\\_lancet.pdf](http://breakglass.files.wordpress.com/2007/10/lofgren_fefferman_lancet.pdf)
- Scott Aaronson, "The Prime Facts: From Euclid to AKS", manuscript, 2003.  
<http://www.scottaaronson.com/writings/prime.pdf>
- Ian Stewart, "Million Dollar Minesweeper", Scientific American, October 2000. (Need to copy from library.)
- Lance Fortnow, "The Status of the P Versus NP Problem", Communications of the ACM, 2009.  
<http://cacm.acm.org/magazines/2009/9/38904-the-status-of-the-p-versus-np-problem/fulltext>

**Videos:**

- Why Computer Science and Engineering?, University of Washington.  
<http://www.cs.washington.edu/WhyCSE>
- SIGGRAPH Video Review, Issue 137, The Story of Computer Graphics, Video Tape / DVD, 1999.
- ARPANET Videos (origins of the Internet).  
<http://www.newmediamedicine.com/blog/2006/08/16/arpanew-video/>

- Sketchpad Videos / Ivan Sutherland.
- HCI Videos / Alan Kay - "Doing With Images Makes Symbols".  
<http://video.google.com/videoplay?docid=-533537336174204822>
- Douglas Englebart Demo.  
<http://sloan.stanford.edu/MouseSite/1968Demo.html>
- John Koza Genetic Programming Demo Videos (DVD).
- "Arthur Benjamin does Mathemagic", TED talk video.  
[http://www.ted.com/talks/arthur\\_benjamin\\_does\\_mathemagic.html](http://www.ted.com/talks/arthur_benjamin_does_mathemagic.html)

**Web Sites:**

- Slashdot: <http://slashdot.org>.
- Electronic Frontier Foundation: <http://eff.org>.
- Wikipedia: <http://wikipedia.org>.
- A.L.I.C.E. Conversation Bot: <http://www.alicebot.org>.
- Lawrence Lessig's Blog: <http://www.lessig.org/blog/>.
- Creative Commons: <http://creativecommons.org>.
- Ed Felton's Blog: <http://www.freedom-to-tinker.com>.
- Black Box Voting: <http://www.blackboxvoting.org>.
- Joel on Software: <http://www.joelonsoftware.com>.
- Free Software Foundation: <http://fsf.org>.
- GNU Project: <http://www.gnu.org>.
- Simulation Argument: <http://www.simulation-argument.com>.
- Paul Graham's site: <http://www.paulgraham.com>.

- Ray Kurzweil's site: <http://www.kurzweilai.net>.
- Eric S. Raymond's site: <http://www.catb.org/~esr>.
- American Association for Artificial Intelligence (AAAI), AI Topics: <http://www.aaai.org/AITopics/html/welcome.html>.
- History of Programming Languages (chart and content): <http://www.levenez.com/lang/>.
- Programming Languages (Wikipedia article):  
[http://en.wikipedia.org/wiki/Programming\\_language](http://en.wikipedia.org/wiki/Programming_language),  
[http://en.wikipedia.org/wiki/History\\_of\\_programming\\_languages](http://en.wikipedia.org/wiki/History_of_programming_languages).
- Colorless Green Ideas Sleep Furiously: [http://en.wikipedia.org/wiki/Colorless\\_green\\_ideas\\_sleep\\_furiously](http://en.wikipedia.org/wiki/Colorless_green_ideas_sleep_furiously).
- Money Magazine Best Jobs (Software Engineering): <http://money.cnn.com/magazines/moneymag/bestjobs/2010/>.
- Operating Systems (Wikipedia article): [http://en.wikipedia.org/wiki/Operating\\_system](http://en.wikipedia.org/wiki/Operating_system).
- Compilers (Wikipedia article): <http://en.wikipedia.org/wiki/Compiler>.
- Middleware (Wikipedia article): <http://en.wikipedia.org/wiki/Middleware>.
- Database Management Systems: [http://en.wikipedia.org/wiki/Database\\_management\\_system](http://en.wikipedia.org/wiki/Database_management_system).
- Internet: <http://en.wikipedia.org/wiki/Internet>.
- Rule 110: [http://en.wikipedia.org/wiki/Rule\\_110\\_cellular\\_automaton](http://en.wikipedia.org/wiki/Rule_110_cellular_automaton).
- Wolfram's 2-state, 3-symbol Turing machine (simplest known universal TM?): [http://en.wikipedia.org/wiki/Wolfram%27s\\_2-state\\_3-symbol\\_Turing\\_machine](http://en.wikipedia.org/wiki/Wolfram%27s_2-state_3-symbol_Turing_machine).
- Conway's Game of Life: [http://en.wikipedia.org/wiki/Conway's\\_Game\\_of\\_Life](http://en.wikipedia.org/wiki/Conway's_Game_of_Life).