EECS 550 **References** **Fall 2004**

Books on reserve at the media union are marked with *.

The original work (quite readable)

C. Shannon, "A mathematical theory of communication," Bell Systems Tech. Journal, 1948, pp. 379-423 and 623-656.

This is remarkably readable. It can downloaded from:

http://cm.bell-labs.com/cm/ms/what/shannonday/paper.html

Also, it is reprinted in book form with prefacing article by W. Weaver, Univ. of Illinois Press. Reprinted in *Key Papers in the Development of Information Theory*, D. Slepian, editor, Reprinted in *Claude Elwood Shannon, Collected Works*, N. Sloan and A. Wyner, editors.

Information theory and coding books

N. Abramson, Information Theory and Coding
R. Ash, Information Theory
R. Blahut, Principles and Practice of Information Theory
*T. Cover & J. Thomas, Elements of Information Theory
*R. Gallager, Information Theory and Reliable Communication
*R. Hamming, Coding and Information Theory (2 editions)
D. Jones, Elementary Information Theory
*M. Mansuripur, Introduction to Information Theory
R. McEliece, The Theory of Information and Coding
R. Yeung, A First Course in Information Theory

Cover and Thomas is the most widely used textbook. Gallager is the classic information theory reference. Ambramson, Hamming, Jones, and Mansuripur are somewhat lower in level and easier to read.

Advanced books

P. Billingsley, Ergodic and Information Theory
I. Csiszar & J. Korner, Information Theory: Coding Theorems for Discrete Memoryless Systems
A. Feinstein, Foundations of Information Theory
R.M. Gray, Entropy and Information Theory
A. Khinchin, Mathematical Foundations of Information Theory
S. Kullback, Information Theory and Statistics
M. Pinsker, Information and Information Stability of Random Statistics
J. Wolfowitz, Coding Theorems of Information theory (3 editions)

Source Coding (data compression)

T. Bell, J. Cleary & I. Witten, Text Compression
T. Berger, Rate Distortion Theory: A Mathematical Basis for Data Compression
R. Clarke, Transform Coding of Images
R. Gray, Source Coding Theory
A. Gersho and R. Gray, Signal Coding: Quantization and Compression
J. Gibson, T. Berger, T. Lookabough, D. Lindbergh, R. Baker, Digital Compression for Multimedia
N. Jayant and P. Noll, Digital Coding of Waveforms: Principles and Applications to Speech and Video.
M. Nelson, The Data Compression Book
A. Netravali and B. Haskell, Digital Pictures: Representation and Compression (2 editions)
M. Rabbani & P. Jones, Digital Image Compression Techniques
K. Sayood, Introduction to Data Compression.
J. Storer, Data Compression Methods and Theory

J. Storer, Image and Text Compression
I. Witten, A. Moffat, T. Bell, Managing Gigabytes

Channel coding (error correcting codes)

I. Berlekamp, Algebraic Coding Theory
R. Blahut, Theory and Practice of Error Control Codes
G. Clark and J. Cain, Error-Correction Coding for Digital Communications
L. Lee, Error-Control Block Codes for Communications Engineers
S. Lin and D. Costello, Error control coding: fundamentals and applications
F. MacWilliams and N. Sloane, The Theory of Error Correcting Codes
R. McEliece, The Theory of Information and Coding
A. Michaelson and A. Levesque, Error-Control Techniques for Digital Communication
W. Peterson and E. Weldon, Error-correcting codes (2 editions)
V. Pless, Introduction to the Theory of Error-Correcting Codes
P. Sweeney, Error Control Coding
J. van Lint, Coding Theory
S. Wicker, Error Control Systems for Digital Communication and Storage

Collections of Papers

D. Slepian, Key Papers in the Development of Information Theory.
R. Berlekamp, Key Papers in the Development of Coding Theory
N. Sloan and A. Wyner, editors. Claude Elwood Shannon, Collected Works,
L. Davisson and R. Gray, Data Compression

About Claude Shannon and His Work

articles:

J. Horgan, "Claude E. Shannon", IEEE Spectrum, pp. 72-75, April 1972.
J. Horgan, "Claude E. Shannon: Unicyclist, juggler and father of information theory", Scientific American, pp. 22ff, Jan. 1990.
A. Liversidge, "A Profile of Claude Shannon, " Omni Magazine, Aug. 1987. Reprinted in "Claude Elwood Shannon : Collected Papers" by N. Sloane and A. Wyner.
J.R. Pierce, "Looking back-Claude Elwood Shannon", IEEE-Potentials. vol.12, Dec. 1993; pp. 38-40.
R. Price, "A conversation with Claude Shannon: one man's approach to problem solving", Cryptologia 9 (2) (1985), 167-175.

websites:

http://www.sciam.com/bookmarks/051898index.html
http://www.lucent.com/minds/infotheory/
http://www.home.gil.com.au/~bredshaw/shannon.htm
http://www-groups.dcs.st-and.ac.uk/%7ehistory/Mathematicians/Shanno\ n.html
http://www.nightgarden.com/infosci.htm#claude
http://cm.bell-labs.com/cm/ms/what/shannonday/work.html
http://www.spectrum.ieee.org/INST/oct98/its.html
http://www.lis.pitt.edu/~mbsclass/is2000/hall_of_fame/shannon.htm

501-level Texts on Probability and Random Processes

W. Davenport, Probability and Random Processes (two editions)
W. Davenport and W. Root, Introduction to the Theory of Random Signals
W. Gardner, Introduction to Random Processes, (two editions)
R. Gray and L. Davisson, Random Processes
R. M. Gray and L. D. Davisson, An Introduction to Statistical Signal Processing is available for free download at: www-ee.stanford.edu/~gray/sp.html
G. Grimmett and D. Stirzaker, Probability and Random Processes
A. Leon-Garcia, Probability and Random Processes for Electrical Engineering (2 editions)
R. Mortensen, Random Signals and Systems

A. Papoulis, Probability Random Variables and Stochastic Processes, (three editions).
B. Picinbono, Random Signals and Systems
S. Ross, Introduction to Probability Models
D. Sakrison, Communication Theory (Chapters 3 and 4)
H. Stark and J. Woods, Probability, Random Processes and Estimation Theory for Engineering (two editions)