REFERENCES FOR
ENEE 722 ERROR CORRECTING CODES


13. Gallager, R.G., *Low-Density Parity Check Codes*, MIT Press, Cambridge, Massachusetts, 1963. (Basically Gallager’s Ph.D. thesis. These codes have recently been re-discovered and are being studied extensively. They can have performance close to capacity with iterative soft-input/soft-output decoding.)


17. Heegard, Chris and Stephen B. Wicker, *Turbo Coding*, Kluwer Academic Publishers, 1999. (It is not well written. The authors try to formalize and abstract things and “hide the trees in the forest.” Auxiliary points are belabored while critical details are glossed over.)


19. Huffman, W. Cary, and Vera Pless, *Fundamentals of Error-Correcting Codes*, Cambridge University Press, 2003. (A detailed presentation of the mathematical aspects of algebraic codes with a brief chapter on convolutional codes and probabilistic decoding. The subtle algebraic properties of many codes are presented but almost no discussion of the relative merits of the codes is presented. This book will not be much help to engineers interested in implementing practical coded systems.)

20. Johannesson, Rolf and Kamil Sh. Zigangirov, *Fundamentals of Convolutional Coding*, IEEE Press, 1999. (A very indepth treatment of binary convolutional codes. It includes a detailed presentation on the algebraic structure of convolutional codes; list decoding; sequential decoding by the stack, Fano, and creeper algorithms; iterative decoding; and trellis coding. Much of the material cannot be found in any other textbook.)


32. Morelos-Zaragoza, Robert H., *The Art of Error Correcting Codes*, J. Wiley & Sons, 2002. (A very nice survey of error correcting codes starting with classical block and convolutional codes up through recent interactive decoding methods including turbo codes and low-density parity check codes. The author maintains a website of programs for ECC. Unfortunately, the book includes essentially no theory but just catalogs results. Therefore, no idea of how codes really work can be learned from it. An up-to-date list of references is included.)


42. Reed, Irving S. and Xuemin Chen, *Error-Control Coding for Data Networks*, Kluwer Academic Publishers, 1999. (A moderately in-depth and comprehensive coverage of error control codes. Of course, Reed-Solomon codes are extensively discussed. There are many any examples of applications in real-world systems. The presentations are often brief and more like a survey. Reference to more detailed treatments would be required to fully understand many topics.)


44. Schlegel, Christian B., and Lance C. Pérez, *Trellis and Turbo Coding*, IEEE Press, Wiley-Interscience, 2004. (A reasonably good and modern introduction to convolutional, trellis, LDPC, and turbo codes. Iterative decoding and factor graphs are discussed. The presentation is clear in some places but brief and not very understandable in others. There are lots of typos and some conceptual errors.)


47. Sweeney, Peter, *Error Control Coding, from Theory to Practice*, Wiley, 2002. (A very readable introduction and survey of the field. The depth of coverage for each topic is very shallow and the book will not be useful for really learning the art of error control coding.)


51. Vucetic, Branka, and Jinhong Yuan, *Turbo Codes, Principles and Applications*, Kluwer Academic Publishers, 2000. (A nicely written book that presents the theory and practice. Starting with Chapter 7 Interleavers, the presentation becomes much more descriptive and hand-waving which makes the presentation much less satisfying.)


54. Wicker, Stephen B., and Saejoon Kim, *Fundamentals of Codes, Graphs, and Iterative Decoding*, Kluwer Academic Publishers, 2003. (Contains many recent research results. The book is not well written. It contains great detail about less important topics and leaves out significant steps in derivations of important results. There are many typo’s and at least one figure that doesn’t correspond to the text.)

55. Wilson, Stephen G., *Digital Modulation and Coding*, Prentice-Hall, 1996. (Covers information theory, detection, and cyclic and convolutional codes. Good survey but not a lot of depth.)