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|            | 1/24      | **Ch. 1  Introduction**  
Lossless vs. Lossy Compression                                         |
| 1          | 1/24      | **Ch. 2  Math Preliminaries for Lossless Compression**  
Appendix A: Review of Probability  
2.2 Brief Intro to Information Theory  
(Skip Starred Sections)  
2.3 Models  
2.4 Coding  
   Uniquely Decodable Code:  
   Prefix Codes  
   Kraft-McMillan Inequality |
| 0.5        | 1/26a     | **Ch. 3  Huffman Coding**  
3.2 Basic Algorithm  
3.2.1 Minimum Variance Huffman Code:  
3.2.2 Optimality of Huffman Codes  
3.2.3 Length of Huffman Codes  
   (We’ll just state the result)  
3.2.4 Extended Huffman Codes |
|            | 1/26b, 1/31a | **Ch. 4  Arithmetic Coding**  
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| 1          |           | **Ch. 7  Mathematical Preliminaries for Lossy Coding**  
Appendix A & Class Notes: Random Processes  
7.2 Introduction  
7.3 Distortion Criteria  
7.4 Information Theory for Lossy  
7.5 Rate-Distortion Theory  
7.6 Models |
Ch. 8 Scalar Quantization (SQ)
  8.2 Introduction
  8.3 Quantization Problem
  8.4 Uniform Quantization
  8.5 Adaptive Quantization
  8.6 Nonuniform Quantization
  8.7 Entropy-Coded Quantization

Ch. 9 Vector Quantization (VQ)
  9.2 Introduction
  9.3 Advantages of VQ Over SQ
  9.4 LBZ Algorithm for VQ Design

Ch. 11 Math for Transforms, Subbands, and Wavelets
  (All other sections are for Review Reading
  11.2 Introduction
  11.3 Vector Spaces (also notes on web)
  Appendix B: Matrices

Ch. 12 Transform Coding
  12.2 Introduction
  12.3 The Transform
  12.4 Transforms of Interest
  12.5 Quantization & Coding of Coefficients
  12.6 Application to Images: JPEG
  12.7 Application to Audio

Ch. 13 Subband Coding
  13.2 Introduction
  13.3 Filters
  13.4 Basic Subband Algorithm
  13.5 Design of Filter Banks
  13.6 Perfect Reconstruction
  13.7 M-Band QMF Filter Banks
13.8 Skip This Section (Polyphase)
13.9 Bit Allocation
13.10 Application: Speech
13.11 Application: Audio
13.12 Application: Image

2  2/21b, 2/23, 2/28a  Ch. 14 Wavelet Methods
   14.2 Introduction
   14.3 Wavelets
   14.4 Multiresolution Analysis
   14.5 Implementation via Filters
   14.6 Image Compression
   14.7 Embedded Zerotree (EZW)
   14.8 SPIHT
   14.9 JPEG 2000

1.5  2/28b, 3/2  Ch. 16 Video Compression
   16.2 Introduction
   16.3 Motion Compensation
   16.4 Video Signal Representation
   16.5 Video Conferencing
   16.6 Asymmetric Applications
   16.7 Packet Video

2  3/7, 3/9  Current Topics
   A. Ortega and K. Ramachandran, “Rate-Distortion
   Methods for Image and Video Compression,”
   IEEE Signal Processing Magazine , pp. 23 – 50,
   November 1998.

Others To Be Determined As Time Permi: