

Instructional Objectives for Roberts Chapter 7 – Sampling and the Discrete Fourier Transform

7.1 – Introduction and Goals

Describe why sampling is required when using digital computers

7.2 Sampling Methods

Define: encoding, decoding, sample and hold, quantization, ADC, DAC

Describe/sketch the resulting spectrum after ideal sampling

7.3 Representing a Continuous-time Signal by Samples

Define: frequency content of a signal

State Shannon's sampling theorem

Define aliasing and describe why it is detrimental

Given an analog signal or spectrum, determine the Nyquist frequency and the Nyquist rate

7.8 The Fast Fourier Transform

Describe the utility of the FFT

Apply the FFT using MATLAB to determine frequency content of various waveforms